N83447.AR.000120
NAS FORT WORTH
5090.3a

SAMPLING RESULTS FROM BASE SERVICE STATION ST16 NAS FORT WORTH TX
7/1/1993
ARMY CORP OF ENGINEERS

File: 17G
A.F.

155039

NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 155

File:
D.B. 1637 1

Sampling Results

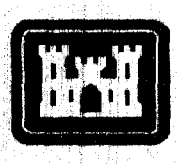
May 1993

Base Service Station

ST16 BSS

Carswell Air Force Base

Prepared for
Carswell Air Force Base
Fort Worth, Texas



Prepared by
U.S. Army Corps of Engineers
Fort Worth District

July 1993

Sampling Results

May 1993

Base Service Station

ST16 BSS

Carswell Air Force Base

Prepared for
Carswell Air Force Base
Fort Worth, Texas

Prepared by
U.S. Army Corps of Engineers
Fort Worth District

July 1993

SAMPLING RESULTS
MAY 1993
BASE SERVICE STATION
ST16 BSS
CARSWELL AIR FORCE BASE

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

SAMPLING RESULTS
MAY 1993
BASE SERVICE STATION
ST16 BSS
CARSWELL AIR FORCE BASE

1.0 Introduction. The Base Service Station (BSS) is located at the northwest corner of the intersection of Jennings Drive and Rogner Drive along the eastern edge of Carswell Air Force Base (CAFB), as shown on **Figure 1**. The site was originally identified as a potential source of petroleum hydrocarbon contamination in the 1980's under the Air Force Installation Restoration Program (IRP). Gasoline contamination was verified in the vicinity of the four underground storage tanks (USTs) servicing the station, and the site was designated as ST16 BSS for further investigations under the Air Force IRP to determine the extent of contamination and to ultimately remediate the site.

Late in 1992, CAFB reported a subsurface release of gasoline from the BSS to the Texas Water Commission (TWC). The TWC then issued a Notice of Violation (NOV) to CAFB for a petroleum release to the adjacent West Fork Trinity River. The BSS was cited as the source of this release. Carswell AFB has since initiated several contracts to assess the extent of the contamination problem and to address information required by the TWC.

In December 1992, the U.S. Army Corps of Engineers, Fort Worth District (COE), was tasked by CAFB to perform additional investigations as part of an IRP Remedial

Investigation/Feasibility Study (RI/FS) for the site. The COE has since performed a soil gas survey, has drilled and sampled three soil borings, has administered a contract for removing the four 10,000-gallon USTs which serviced the station, and has performed a ground-water and surface water sampling event. This report documents the results of the ground-water and surface water sampling event performed by the COE in May 1993.

2.0 Purpose. The purpose of this report is to document the sampling event performed by the COE from 5-14 May 1993 at the ST16 BSS on CAFB. The information obtained from this event is intended to be used to begin defining the extent of the ground-water contaminant plume, to aid in determining if the source of the petroleum release to the West Fork Trinity River is the BSS, and to develop a plan for both completing the plume definition and for obtaining aquifer characteristics for evaluating remediation alternatives. It is not intended to be a comprehensive report documenting the history of the site or the data obtained from previous investigations. Where applicable and when available, data from previous investigations have been used to aid in assessing the subsurface conditions at the site and in interpreting the sampling and analytical data obtained from this event.

3.0 General Site Information. The BSS is located approximately 500 feet west of the western bank of the West Fork Trinity River and approximately 450 feet west of the eastern installation boundary. The four 10,000-gallon USTs formerly servicing the BSS

were located in a single embayment situated at the northern extent of the service station. These tanks were removed during the same week this sampling event was performed. Ground water was observed within the excavation occurring approximately 5 feet below the ground surface. Gasoline contamination was evident by the strong odor and contaminated appearance of the ground water occurring in the tank excavation. Analyses of soil and water samples, as well as documentation of any observed leaks in the pulled tanks, have not yet been received by the COE in the contractor's final report. The excavation was backfilled once the tanks were removed. Underground lines were left in place and were capped.

An underground petroleum pipeline owned by Chevron exists between the boundary fence of the installation and the West Fork Trinity River. This pipeline was considered a possible source of the product entering the river, but it has since been determined that the line has been out of service for several years. Other features possibly impacting either the surface or subsurface distribution of contaminants are a sewer line running parallel to the eastern edge of Rogner Drive downgradient of the station and surface drainage ditches running adjacent to the southern and eastern edges of the site which carry surface water to the West Fork Trinity River.

Prior to performing any sampling, the site was surveyed to develop a site map for accurately referencing sample locations. Well locations were surveyed and plotted. Well reference

elevations were also established for accurately plotting subsurface conditions. The field survey map showing ground surface elevation contours, utilities, structures, well and soil boring locations, and the boom location in the river where the product seep has been observed is shown on **Figure 2**. A site map developed from this survey data depicting surface drainage pathways and all sampling locations is shown on **Figure 3**. Well survey data are presented on **Table 1**.

4.0 Sampling Information. This ground-water and surface water sampling event was performed by COE personnel from 5-14 May 1993. Ten ground-water monitoring wells, five surface water locations, and one shallow soil location were sampled in accordance with the sampling procedures contained in **Appendix A**. A summary of the types and distribution of samples collected and the analyses performed is presented on **Table 2**. A summary of the sample containers and preservation procedures for the samples collected is presented on **Table 3**. All samples were shipped to the Corps of Engineers Southwestern Division Laboratory in Dallas, Texas, within 24 hours of being taken. Purge water was drummed, labeled, and was temporarily stored at a COE building at the Federal Center in Fort Worth, Texas, until arrangements for final disposal were made. The purge water contained in six 55-gallon drums was pumped into a tank truck and manifested for disposal on 6 July 1993. A copy of the signed manifest is provided as **Figure 4**. Field documentation of all sampling performed is contained in **Appendix B**. Sample locations are described in the following

paragraphs.

4.1 Shallow Soil Sample Location. One shallow soil sample, SED-1, was collected on 5 May 1993 from the top 2 inches of soil along the western bank of the West Fork Trinity River at a location where a strong petroleum odor was noted emanating from the soil during a pre-sampling site visit. The sample location is shown on **Figure 3**. The sample was analyzed for total recoverable petroleum hydrocarbons (TRPH), benzene, toluene, ethyl benzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAH) using TWC guidelines for sampling for an unknown petroleum source. Total metals were not analyzed because whether the source was the BSS or the pipeline, lead was not expected. Volatile organic compounds (VOCs) also were not analyzed because it was originally intended the sample be collected as a sediment sample within the river. If collected from the river, VOCs were not expected to be present. The sample location changed when the odor was noted during the site visit, but the sampling plan was not revised.

4.2 Surface Water Sample Locations. A total of five surface water samples were collected during this event. It was originally intended that only one surface water sample, SW-1, would be collected and it would be taken from the West Fork Trinity River where seepage had been observed. This sample was collected on the same day as SED-1, 5 May 1993, at a location immediately downslope from the soil sample location, as shown on **Figure 3**. The sample location was within the limits of the boom;

however, no sheen or other physical evidence of petroleum hydrocarbons was present at the time of sampling. The sample was analyzed for TRPH, BTEX and methyl tertiary butyl ether (MTBE), PAH, and VOCs using TWC guidelines for sampling for an unknown petroleum source. Total metals were not analyzed for the same reason cited for SED-1.

Four additional surface water samples, SW-2 through SW-5, were added to the sampling plan during the week of 10 May when it was noted that the culvert beneath the eastern driveway of the BSS had a strong gasoline odor, and there was a sheen on the standing water at the downstream end of this pipe. When the tank excavation was opened and ground water was observed at roughly 5 feet below the ground surface, it also became suspect that this ground water may be discharging to surface drainage via the gravel bed underlying the culvert. Walking the various drainage paths leading from the site showed that these converge at the intersection of Jennings and Rogner Drives and continue to flow eastward along an unlined ditch which discharges to the West Fork of the Trinity River.

Each of the surface water sample locations sampled are shown on **Figure 3**. Sample SW-2 was collected at the discharge of the culvert underlying the BSS driveway. Sample SW-3 was collected at the headwall of the drainage ditch running along the southern end of the site and collecting drainage from the west. Sample SW-4 was collected at a point where these two drainage pathways converge at the southeast corner of the intersection. Sample SW-

5 was collected at a location immediately downstream of where all surface drainage collects at the intersection, but upstream of the oil/water separator discharge. All of these samples were analyzed for TRPH, BTEX, and MTBE.

4.3 Ground-water Monitoring Wells. The ten ground-water monitoring wells which were sampled during this event were BSS-A, BSS-B, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, SAV-1, and SAV-2. Well boring logs, well construction details, and State of Texas Well Reports for these wells are contained in **Appendix C**. Well locations are shown on **Figure 3**.

Wells BSS-A and BSS-B were installed by Atec Associates for Radian Corporation in February 1988 during the first attempt to determine if petroleum hydrocarbon contamination was present. A third well, BSS-C, was also installed at that time, but was later abandoned when it suffered surface damage. The well is still in place, but has not been plugged and was not sampled during this event. Its condition also was not determined.

Wells MW-1 and MW-2 were installed by Maxim Engineers in August 1992 as part of further investigations for determining the extent of contamination at the site. These wells were both sited downgradient of the BSS. Maxim Engineers later installed an upgradient well, MW-3, in September 1992.

In October 1992, Leak-Tec installed wells MW-4, MW-5, and MW-6. Boring logs, construction details, and well reports designated these wells as MW-1, MW-2, and MW-3, respectively, but they have since been renumbered to MW-4 through MW-6 to avoid

duplication.

Wells SAV-1 and SAV-2 were installed approximately 2 weeks prior to this sampling event for the purpose of beginning extraction and treatment of the contaminated ground water. They were originally labeled as wells MW-1 and MW-2 on the field data reports, but have been temporarily relabeled as SAV-1 and SAV-2 to avoid duplication. It is important to note that these wells were not installed as monitoring wells and were not developed prior to this sampling event. Carswell AFB has since postponed any extraction and treatment plans until more data are obtained on the extent of contamination and the nature of the ground water at the site.

4.4 Soil Boring Locations. Four soil borings have been drilled at the site during two previous investigations. Atec drilled a soil boring, BSS-D, approximately 150 feet east of BSS-B in 1988. This soil boring location is not shown on **Figure 3**, but the soil boring log is provided in **Appendix C**. Three other borings, ST16-1 through ST16-3, were drilled in December 1992 by the COE along the former pump islands for the purpose of assessing the extent of contamination in this area. These three boring locations are shown on **Figure 3**, and the boring logs are contained in **Appendix C**.

5.0 Sampling Results. Sampling proceeded as outlined in the sampling plan with only a few unusual conditions noted. None of the wells sampled were marked with any well numbers. Surface water was observed filling the opening around the wellhead of

well MW-6. The seal on this well casing was not tight, which may allow some of this water to enter the well. Surface water was also noted around the well casing in well BSS-A; however, the cap on this well was tight.

Another unusual condition was noted while sampling wells BSS-A and BSS-B. Both of these wells contained black water which did not clear up during purging and sampling. The water in BSS-B had a very strong petroleum odor, but the water in BSS-A had only a slight organic odor. The explosimeter alarm went off immediately above the wellhead when well BSS-A was first opened. The well was allowed to air for a few minutes, and conditions returned to normal.

Sampling results are presented and discussed in the following paragraphs.

5.1 Piezometric Surface. The depth to water was measured in each well prior to purging. The standard procedure for obtaining this measurement included using gasoline gauging paste to record the presence of any free product. No free product was found in the ten wells sampled. Depths recorded were in most cases measured from a surveyed reference point on the well for which an elevation had been determined. The exception to this was wells SAV-1 and SAV-2 for which only a ground elevation had been surveyed. The sampling crew measured the stick-up of the well casing, and this measurement was added to the surveyed ground elevation for determining the elevation of the ground water in each of these wells. Ground-water surface measurements and

elevations are presented on **Table 4**.

A piezometric surface map developed from the water level elevations recorded the week of 10 May 1993 is shown on **Figure 5**. Ground-water elevations from wells SAV-1 and SAV-2 were not used in developing this figure because they were slightly anomalous in relation to the other elevations recorded. This may be due to no well development when the wells were installed or from inaccurately calculated elevation data (see **para 4.3**), and should be verified when future water level measurements are made.

Ground water occurs under water table conditions within the clay, sand, and gravel alluvial deposits overlying the Goodland Limestone. Subsurface profiles illustrating the stratigraphy across the site are shown on **Figures 6, 7,** and **8**. Ground water flows eastward across the site at a gradient of 0.035. Applying this value to the distance between the tank excavation and the sampling locations SED-1 and SW-1 (700 feet) yields a difference in ground-water elevation of 24.5 feet, which corresponds roughly to a ground-water flow path from the BSS to the seepage area at the river.

5.2 Ground-water Analytical Results. Ground-water analytical results are summarized on **Table 5**. Complete laboratory analyses are contained in **Appendix D**. No free product was encountered in any of the wells sampled. Only one well, MW-3, located upgradient to the site, showed no indication of petroleum hydrocarbon contamination. The concentration of TDS in this well was 464 mg/l.

Detected concentrations of MTBE, total BTEX, and TRPH are each contoured on **Figures 9, 10,** and **11,** respectively. **Figures 12, 13,** and **14** show the same contoured concentrations overlying the piezometric surface. Configurations of each of these contaminant plumes appear to generally agree with the direction of ground-water flow, with the highest concentrations originating from the direction of the former underground storage tank system. The highest concentrations of each of these three petroleum contaminants were found in well BSS-B situated adjacent to the tank embayment, and the two wells SAV-1 and SAV-2 situated immediately downgradient from the embayment. Well BSS-B detected 7.6 mg/l MTBE, 42.1 mg/l BTEX, and 10.1 mg/l TRPH; well SAV-1 detected 5.3 mg/l MTBE, 23.3 mg/l BTEX, and 11.8 mg/l TRPH; and well SAV-2 detected 7.1 mg/l MTBE, 28.2 mg/l BTEX, and 9.0 mg/l TRPH.

The configuration of the TRPH contaminant plume indicates two areas of high concentration. One area is centered around well SAV-1. The other area is centered around well BSS-B. These two areas of high TRPH concentration may be indicative of two releases from the BSS system.

The distribution of the high concentrations of the contaminants plotted generally agree with the results of the soil gas survey performed in February 1993 by Target Environmental Services, Inc., and the fact that free product had been recovered from well BSS-B in the past. However, the soil gas survey failed to identify the contamination present in wells MW-1 and MW-2.

Figure 15 shows the contoured concentrations of total FID volatiles from the soil gas investigation.

5.3 **Surface Water Analytical Results**. Surface water analytical results are summarized on **Table 6**. Complete laboratory analyses are contained in **Appendix D**. Detected concentrations of MTBE, total BTEX, and TRPH for each of the surface water sampling locations are shown with the respective ground-water contaminant plumes shown on **Figures 9, 10,** and **11**.

No petroleum hydrocarbons were detected in SW-1 taken from the boomed location in the river. Only two samples, SW-2 and SW-3, showed any hydrocarbon contamination. Sample SW-2 contained the highest concentrations with TRPH at 0.3 mg/l, total BTEX at 136.4 ug/l, and MTBE at 350 ug/l. This sample was collected at the discharge of the culvert underlying the BSS main driveway at the approximate elevation of 559, where ground water is expected to occur. Sample SW-3, taken from the ditch collecting drainage upgradient of the BSS, detected only TRPH at a concentration of 1.1 mg/l. The elevation of this location is also approximately 559, the same at which ground water occurs. Samples SW-4 and SW-5, taken at locations further downstream in the same surface drainage system, contained no detectable levels of petroleum hydrocarbons.

5.4 **Shallow Soil Sample Analytical Results**. The analytical results for the shallow soil sample collected on the western bank of the West Fork Trinity River are shown on **Table 7** and are presented on **Figures 9, 10,** and **11**. Complete analytical results

are contained in **Appendix D**. Total recoverable petroleum hydrocarbons were detected at a concentration of 117 mg/kg, and the PAH compounds detected were benzo(b)fluoranthene (23.6 ug/kg), benzo(a)pyrene (20.9 ug/kg), and dibenzo(a,h)anthracene (20.5 ug/kg). These compounds are typically associated with coal tar and crude oil. No BTEX or MTBE was detected.

6.0 Conclusions. The following conclusions are drawn from the data obtained during this sampling event.

1) The extent of the plume has not been fully defined. Information is lacking for closing high concentration contours in the vicinity of the tank embayment. Information is also lacking for closing concentration contours along the sewer line to the south and along the installation boundary.

2) Ground-water sampling results strongly indicate the UST system at the BSS, rather than the Chevron pipeline, is the source of a gasoline ground-water contaminant plume which extends at least as far eastward as wells MW-1 and MW-2, and likely discharges to the West Fork Trinity River. The relationship between ground-water elevations, ground-water gradient, and location and elevation of the seepage area along the West Fork Trinity River also support this conclusion.

3) The analytical results of the soil sample taken at the river are inconclusive for identifying the source of seep.

4) Well MW-3 is a good upgradient well representing background conditions for the BSS site. No petroleum hydrocarbons were detected in this well. The TDS concentration

of 464 mg/l classifies the ground water quality as Group 1 in accordance with TWC UST guidance. Therefore, cleanup standards for the ground water become 50 ppb benzene, 500 ppb total BTEX, and 1 ppm TRPH, as long as there are no water wells within a one-half mile radius of the release.

5) The configuration of the TRPH contaminant plume indicates two areas of highest concentration. One of these areas is at the former location of the USTs. The other area is around wells SAV-1 and SAV-2, which are situated immediately east of the sewer line. The highest concentration contour for both MTBE and BTEX also extend to the vicinity of the sewer line east of the BSS. This may indicate the sewer line may be affecting migration of the gasoline by providing a preferential flow path.

6) Ground water beneath the BSS discharges to surface water drainage via the gravel beds beneath the culverts at the site. Surface water discharge occurs at approximate elevation 559. Surface drainage leads to the West Fork Trinity River via an unlined drainage ditch southeast of the site. However, TRPH contamination present near the ground-water discharge location was no longer present in samples taken further downstream in the ditches indicating dilution and volatilization had occurred over distance.

7) Surface water discharging from the drainage ditch collecting drainage west and upgradient of the site contains TRPH.

7.0 Recommendations. Results from this sampling event can be used to determine the additional information required for defining the extent of the contaminant plume and for calculating aquifer characteristics necessary for intercepting the plume prior reaching the West Fork Trinity River. The following recommendations are made for making these determinations.

1) Install five monitoring wells at the locations shown on **Figure 16** to finish defining the extent of the contaminant plume. One well should be located to close the high concentration contours near the former tank location. Another well is necessary to better define contours southeast of the site and to better determine the influence, if any, of the sewer line as a migration pathway running through this area. Another three wells are necessary to define the extent and concentration strength of the plume as it leaves the installation boundary to the east. This information should also help determine if another source (i.e., the Chevron pipeline) is responsible for the seepage area at the river. These three wells may be utilized later as possible recovery wells.

2) After installing the additional wells, perform another complete round of ground-water sampling to redefine the contaminant plume. Lead should be included in the analyses.

3) Resample the soil and the surface water at the seepage area along the West Fork Trinity River. A soil sample should be obtained from a greater depth, if possible, and the analyses should include VOCs and lead. The surface water sample should be

attempted a day or two after a heavy rain since it was observed by both COE and CAFB personnel that migration occurs at a greater rate at this time. When taking the surface water sample from the river, it may be advantageous to disturb the river bottom at the sampling location by poking it with a stick. This may release hydrocarbons trapped by the sediment. Include lead in the analyses for the surface water sample.

4) Sample surface drainage upgradient of the BSS in both drainage ditches draining the site to verify whether contaminated ground water is migrating along these pathways or there is an upgradient source for the TRPH detected. An orange colored seepage area has been observed discharging to this drainage system upgradient of the site at the main driveway into Bldg. 1501.

5) Renumber all of the wells monitoring the BSS to simplify recordkeeping and reporting. Wells should be permanently marked.

6) Properly develop wells SAV-1 and SAV-2 for future monitoring and sampling. Complete the wells properly at the ground surface and survey well casing elevations.

7) Plug well BSS-C in accordance with TWC requirements.

8) Determine whether there are any water wells within a one-half mile radius of the site for the purpose of setting clean-up standards for remediation.

9) After sampling the newly installed wells, perform a pump test to determine hydraulic conductivity values for designing a recovery system for the site. Recharge of the wells may be too

fast for performing slug tests for making these calculations. It will be important to observe any effect on the river while performing any drawdown tests.

Table 1. Survey Data for Wells and Boreholes

Hole No.	East Coordinate	North Coordinate	Ground Elevation m.s.l.
BSS-A	2,024,357.67	402,068.71	567.03
BSS-B	2,024,331.56	402,390.19	566.84
BSS-C	2,024,565.39	402,254.10	559.88
MW-1	2,024,591.26	402,429.15	561.06
MW-2	2,024,800.28	402,278.44	558.30
MW-3	2,023,990.22	401,823.77	576.96
MW-4	2,024,335.22	402,380.68	567.19
MW-5	2,024,384.37	402,380.86	561.32
MW-6	2,024,418.34	402,311.95	563.53
SAV-1	2,024,543.98	402,352.32	561.26
SAV-2	2,024,525.90	402,383.71	561.22
ST16-1	2,024,382.27	402,307.72	565.38
ST16-2	2,024,405.13	402,248.69	565.39
ST16-3	2,024,426.72	402,190.24	565.33

Table 2. Sampling Plan for ST16 BSS, CAFB

Samples	BTEX/MTBE Method 8020	TRPH Method 418.1	TDS Method 160.1	PAH Method 8310	VOC Method 8240	GS (BTEX) Method 8000	Field pH/Cond/Temp
TB1	x						
MW3	x	x	x			x(P)	x
MW2	x	x	x			x(P)	x
MW1	x	x	x			x(P)	x
EBA	x	x	x				
BSS-A	x	x	x			x(P)	x
TB2	x						
BSS-B	x	x	x			x(P)	x
MW4	x	x	x			x(P)	x
MW6	x	x	x			x(P)	x
EB5	x	x	x				
MW5	x	x	x			x(P)	x
MW5QA	x	x	x				
MW5QC	x	x	x				
TBS3	x				x		
SW1	x	x		x	x	x(P)	
SED1	x	x		x			
TB3	x						
SW2	x	x					
SW2QC	x	x					
SW2QA	x	x					
SW3	x	x					
SW4	x	x					
SW5	x	x					

Samples = Perform well sampling in the order indicated.
GS(BTEX) = General scan to include BTEX.
x(P) = Possible free product sample if encountered.
TB = Travel blank. Prepare one (1) at beginning of each sampling day. Carry in VOC ice chest.
EB = Equipment blank. Prepare only if sampling equipment has been decontaminated.

Table 3. Containers and Preservation for ST16 BSS, CAFB

WATER			
Parameter	No.	Type Container	Preservation
BTEX/MTBE	3	40-ml glass vial	Full; HCl pH<2
TRPH	2	1-liter amber glass bottle	HCl pH<2
TDS	1	1-liter plastic bottle	None
GS(BTEX)	1	125-ml amber glass bottle	Full or >100 ml
PAH	1	1-liter amber glass bottle	Full
VOC	3	40-ml glass vial	Full; HCL pH<2
SEDIMENT			
BTEX/MTBE	2	40-ml glass vial or 8-oz jar	Full
TRPH	1	8-oz wide mouth glass jar	Full
PAH	1	8-oz wide mouth glass jar	Full

NOTES:

1. All samples are to be kept on ice at all times.
2. A minimum of 100 ml of free product is needed for a GS(BTEX) analysis.
3. Keep all BTEX/MTBE, VOC, GS(BTEX), TB, and TRPH water samples together in an ice chest.

Table 4. Ground-water Surface Elevation Data

Well No.	Date	Reference Point	Ref. Pt. Elevation (msl)	Depth to Ground Water (ft)	Ground Water Elevation (msl)
SAV-1	10 May 93	Well csg	564.54	11.64	552.90
SAV-2	10 May 93	Well csg	563.80	10.80	553.00
MW-1	11 May 93	Well csg	560.86	7.97	552.89
MW-2	11 May 93	Well csg	557.81	10.14	547.67
MW-3	13 May 93	Well csg	576.76	10.83	565.93
MW-4	12 May 93	Prot csg	567.13	6.63	560.5
MW-5	12 May 93	Well csg	563.9	4.75	559.15
MW-6	12 May 93	Well csg	563.11	2.33	560.78
BSS-A	13 May 93	Well csg	566.65	5.15	561.5
BSS-B	12 May 93	Well csg	569.72	9.63	560.09

NOTES:

1. Water levels recorded prior to purging.
2. No free product in any wells.
3. Ground-water elevation is approximate for wells SAV-1 and SAV-2. Ground elevation surveyed. Sampling crew measured stick-up on well casing and measured from top of casing.

Table 5. Ground-water Analytical Results

Sample Information			Analyte (Concentration)							
Field I.D.	Date Sampled	Lab I.D.	TRPH (mg/l)	TDS (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl benzene (ug/l)	Xylenes (ug/l)	BTEX (ug/l)	MTBE (ug/l)
TB-1	10 May 93	3-2523	NA	NA	<1.0	1.7	<1.0	<1.0	1.7	<10.0
SAV-1	10 May 93	3-2524	11.8	612	5400	8000	1900	8000	23300	5300
SAV-2	10 May 93	3-2525	9.0	620	6900	12000	1900	7400	28200	7100
TB-2	12 May 93	3-2530	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
MW-1	12 May 93	3-2531	8.2	858	1400	7900	4600	11000	24900	<500
MW-2	12 May 93	3-2532	3.4	872	<10	22	1600	3400	5022	380
TB-3	13 May 93	3-2544	NA	NA	<1.0	1.7	<1.0	<1.0	1.7	<10.0
MW-4	13 May 93	3-2541	5.0	686	5100	9900	1400	6700	23100	520
BSS-B	13 May 93	3-2542	10.1	730	13000	19000	1800	8300	42100	7600
MW-6	13 May 93	3-2543	<0.2	588	<1.0	<1.0	<1.0	<1.0	<1.0	340
MW-3	13 May 93	3-2545	<0.2	464	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
BSS-A	13 May 93	3-2546	0.4	554	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
MW-5	13 May 93	3-2547	3.1	630	4900	2000	1100	3100	11100	4100
MW-5QC	13 May 93	3-2548	2.7	660	5100	1700	1200	2900	10900	4300
MW-5QA	13 May 93	3-2549	8.6	664	7550	2700	1170	3680	15100	18600

NA = Not analyzed.
Complete laboratory analytical results are contained in Appendix D.

Table 6. Surface Water Analytical Results

Sample Information			Analyte (concentration)						
Field I.D	Date Sampled	Lab I.D	TRPH (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl benzene (ug/l)	Xylenes (ug/l)	BTEX (ug/l)	MTBE (ug/l)
TB-S3	5 May 93	3-2512	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
SW-1	5 May 93	3-2513	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
TBS-2	14 May 93	3-2594	NA	<1.0	1.5	<1.0	<1.0	1.5	<10.0
SW-2	14 May 93	3-2598	0.2	24.0	51.0	7.4	53.0	135.4	350
SW-2QC	14 May 93	3-2599	0.3	24.0	51.0	7.4	54.0	136.4	136
SW-2QA	14 May 93								
SW-3	14 May 93	3-2597	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
SW-4	14 May 93	3-2596	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0
SW-5	14 May 93	3-2595	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0

NOTES:
NA = Not analyzed.
Sample SW-1 was analyzed for volatile organic compounds (EPA 8240) and polynuclear aromatic hydrocarbons (EPA 8310). No compounds were detected above detection limits.
Complete laboratory analytical results are contained in Appendix D.

Table 7. Analytical Results for Soil Sample SED-1

Compound	Units	Result
TRPH	mg/kg	117
MTBE	ug/kg	<10
BTEX		
Benzene	ug/kg	<2.0
Toluene	ug/kg	<2.0
Ethyl benzene	ug/kg	<2.0
Xylenes	ug/kg	<2.0
PAH		
Acenaphthene	ug/kg	<1210
Acenaphthylene	ug/kg	<1540
Anthracene	ug/kg	<442
Benzo(a)anthracene	ug/kg	<8.71
Benzo(b)fluoranthene	ug/kg	23.6
Benzo(k)fluoranthene	ug/kg	<11.4
Benzo(g,h,i)perylene	ug/kg	<50.9
Benzo(a)pyrene	ug/kg	20.9
Chrysene	ug/kg	<101
Dibenzo(a,h)anthracene	ug/kg	20.5
Fluoranthene	ug/kg	<141
Fluorene	ug/kg	<141
Indeno(1,2,3-cd)pyrene	ug/kg	<28.8
Naphthalene	ug/kg	<1210
Phenanthrene	ug/kg	<429
Pyrene	ug/kg	<181

Sample was taken on 5 May 1993 from the west bank of the West Fork of the Trinity River.
Lab I.D. 3-2514.

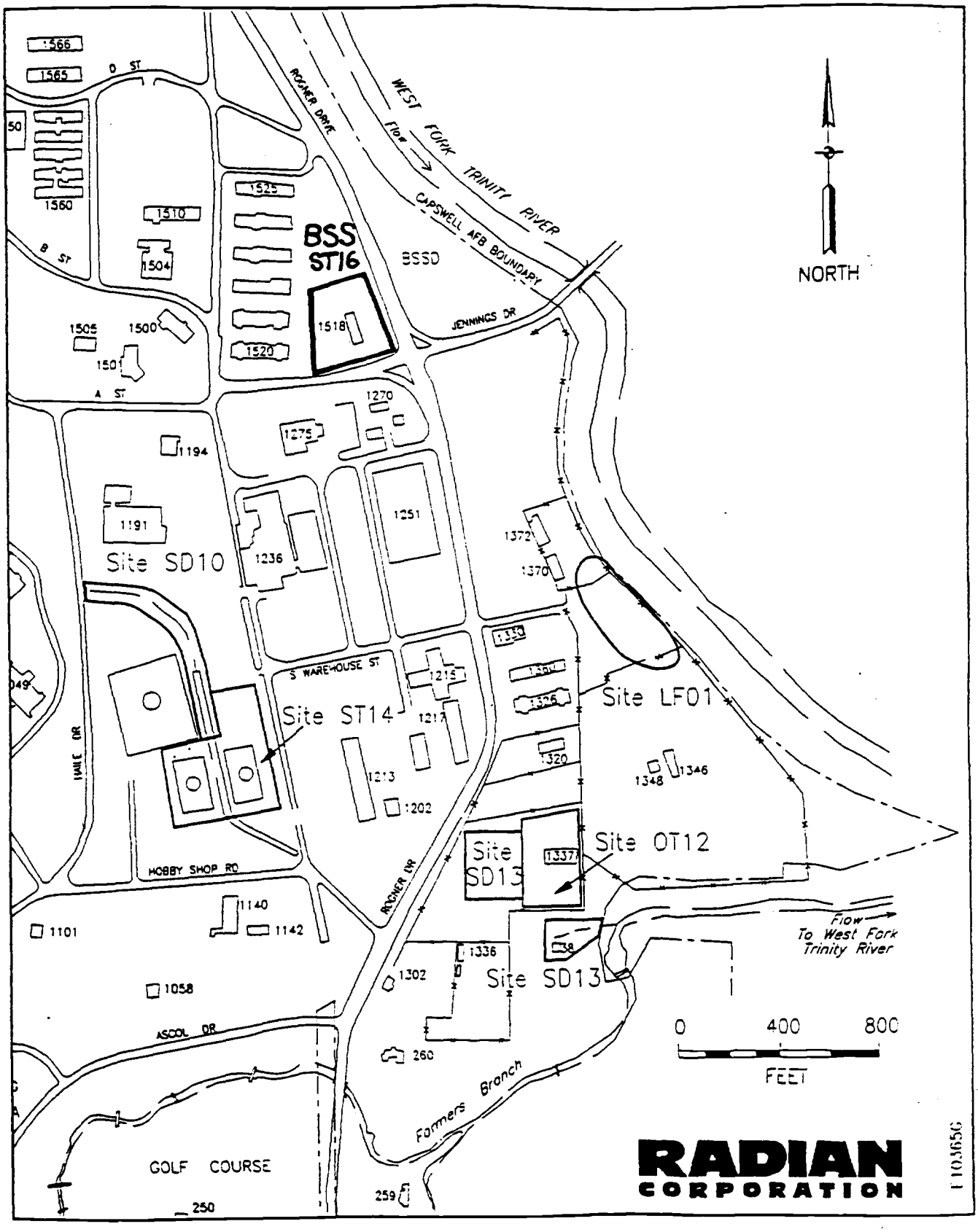


Figure 1. Location Map

155630

N

100 50 0 100 200

SCALE IN FEET

WEST FORK TRINITY RIVER

BOOM

ROGNER DR.

JENNINGS DR.

TBM-R108
PK NAIL
N 402342.2891
E 2025121.9961
ELEV=555.94

TBM-R107
⅝"IRON ROD
N 402064.1661
E 2025283.6121
ELEV=555.57

TBM-R106
⅝"IRON ROD
N 402360.3581
E 2024828.8371
ELEV=563.11

TBM-R105
PK NAIL
N 402608.1290
E 2024251.4371
ELEV=568.85

TBM-R104
PK NAIL
N 402251.3811
E 2024429.8941
ELEV=564.07

TBM-R102
⅝"IRON ROD
N 401883.5291
E 2024208.1981
ELEV=570.73

GAS STATION FF=568.62

GUARD HOUSE FF=562.03

CONCRETE FLUME

MONITOR WELL BSS-B RIM=567.13 PVC=569.72

MONITOR WELL MW-4 RIM=567.13 PVC=566.92

MONITOR WELL MW-5 TP CONC=566.37 PVC=565.90

MONITOR WELL MW-6 RIM=563.53 PVC=563.11

MONITOR WELL MW-7 RIM=561.07 PVC=560.86

MONITOR WELL MW-2 RIM=558.50 PVC=557.81

MONITOR WELL BSS-C ABANDONED RIM=560.10 PVC=559.75

MONITOR WELL BSS-A ABANDONED RIM=567.64 PVC=566.82

MONITOR WELL MW-3 RIM=575.97 PVC=576.78

UNDER CONSTRUCTION MONITOR WELL SAV-2 RIM=561.22

UNDER CONSTRUCTION MONITOR WELL SAV-1 RIM=561.29

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

SITE SURVEY

DATE: JULY 1993 | FIGURE 2

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

f:/cd/drawing/carswell/bse/cmc2080 Tue 14 1993 08:38:01

155031

N

100 50 0 100

SCALE IN FEET

FORMER LOCATION OF 4 UNDERGROUND PETROLEUM STORAGE TANKS (PST's)

LEGEND

MW-1 ● EXISTING MONITOR WELL AND NUMBER

SW-1 ● SURFACE WATER/SEDIMENT SAMPLE LOCATION AND NUMBER

SED-1 ■ SHALLOW SOIL SAMPLE LOCATION AND NUMBER

SURFACE WATER FLOW DIRECTION

BG BACKGROUND SAMPLE LOCATION

ST16-1 ⊕ SOIL BORING LOCATION AND NUMBER

WEST FORK TRINITY RIVER

FLOW

BOOM

ROGNER

JENNINGS DR.

BSS-A

BSS-B

BSS-C (ABANDONED)

MW-1 MW-2 MW-3 MW-4 MW-5 MW-6

SAV-1 SAV-2

SW-1 SW-2 SW-3 SW-4 SW-5

SED-1

ST16-1 ST16-2 ST16-3

GAS STATION FF-568.62

GUARD HOUSE

NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE

ST16

BASE SERVICE STATION

SITE MAP AND SAMPLE LOCATIONS

DATE: JULY 1993 | FIGURE 3

f:/ed/drawing/carswell/bss/bsssite Jul. 20, 1993 07:23:57

MOBLEY COMPANY
UST REMEDIATION FLUID / OFF-SPECIFICATION PRODUCT MANIFEST

155032
No. 060582

CHARACTERIZATION INFORMATION

P.O. DACA63-M-93-K124

Generating Facility Name: Fort Worth Federal Center

Generating Facility Address: Ft Worth, TX Bldg #14

Business Name:

Mailing Address:

Telephone (817) 334 3222

Contractor Name/Contact:

Process Generating the Fluid (Check the Appropriate Process/Fluid Type):

Underground Storage Tank Remediation/Corrective Action
- ☐ Unleaded Gasoline
- ☐ Diesel
- ☐ Aviation Fuel
- ☑ Tank Hold Evacuation
- ☐ UST Monitoring Well Fluid

Maintenance of PST
- ☐ Unleaded Gasoline
- ☐ Diesel
- ☐ Aviation Fuel
- ☐ Fuel Oil

Total Quantity (Gallons): Bulk ( ) _____ Drum Evacuation (✓) 280

I certify that the material removed from the above premises is not hazardous waste as identified in 40 CFR Part 261, and does not contain spent solvents or PCBs as identified in 40 CFR Part 761.

Generator Representative (Print): Robert McVay Title: Geologist

Signature: Robert McVay Date of Service: 7/6/93

TRANSPORTER INFORMATION

Name Mobley Co.; Inc. Telephone 800-999-8628

EPA Transporter ID TXD000807925 State ID 40303 Truck No. 62

Driver's Name (Print) Doug Nelson Trucked Direct to Plant? Y / (N)

7/6/93 Date

Doug Nelson Driver's Signature

MOBLEY COMPANY CORSICANA FUEL FACILITY

Address: 2124 Highway 31 East

City/State: Corsicana, TX 75110

Telephone: 903-874-1188

EPA ID TXD988059291 TWC Reg. No. 20095

I certify that I have received into this facility the above-listed product.

Facility Operator's Name (Print) Rodney DeRoo

7-7-93 Date Received

Rodney DeRoo Facility Operator's Signature

White - Generator - Original Canary - TSD Pink - Transporter Gold - Generator's 1st Copy

THE PRINT SHOP-MARSHALL
REV. 9-92

Figure 4. Manifest for Purge Water

155035

N

100 50 0 100

SCALE IN FEET

FORMER LOCATION OF 4 UNDERGROUND PETROLEUM STORAGE TANKS (PST's)

LEGEND

MW-1 552.89 ● EXISTING MONITOR WELL, NUMBER AND GROUNDWATER ELEVATION, MAY 1993

SW-1 ● SURFACE WATER/SEDIMENT SAMPLE LOCATION AND NUMBER

SED-1 ■ SHALLOW SOIL SAMPLE LOCATION AND NUMBER

► SURFACE WATER FLOW DIRECTION

BG BACKGROUND SAMPLE LOCATION

ST16-3 ◓ SOIL BORING LOCATION AND NUMBER

—549— GROUNDWATER SURFACE ELEVATION, MAY 1993

⇨ GROUNDWATER FLOW DIRECTION

WEST FORK TRINITY RIVER

FLOW

SAV-2 553.00

SAV-1 552.91

MW-1 552.89

MW-5 559.15

MW-6 560.78

BSS-B 560.09

MW-4 560.50

ST16-1

ST16-2

ST16-3

BSS-C (ABANDONED)

MW-2 547.67

SW-1

SED-1

SW-2

SW-3

SW-4

SW-5

BSS-A 561.50

MW-3 565.93

BG

ROGNER DR.

JENNINGS DR.

GAS STATION FF-568.62

GUARD HOUSE

BRIDGE

NOTES:

1. FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

2. WATER LEVEL ELEVATIONS FOR SAV-1 AND SAV-2 WERE NOT USED.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

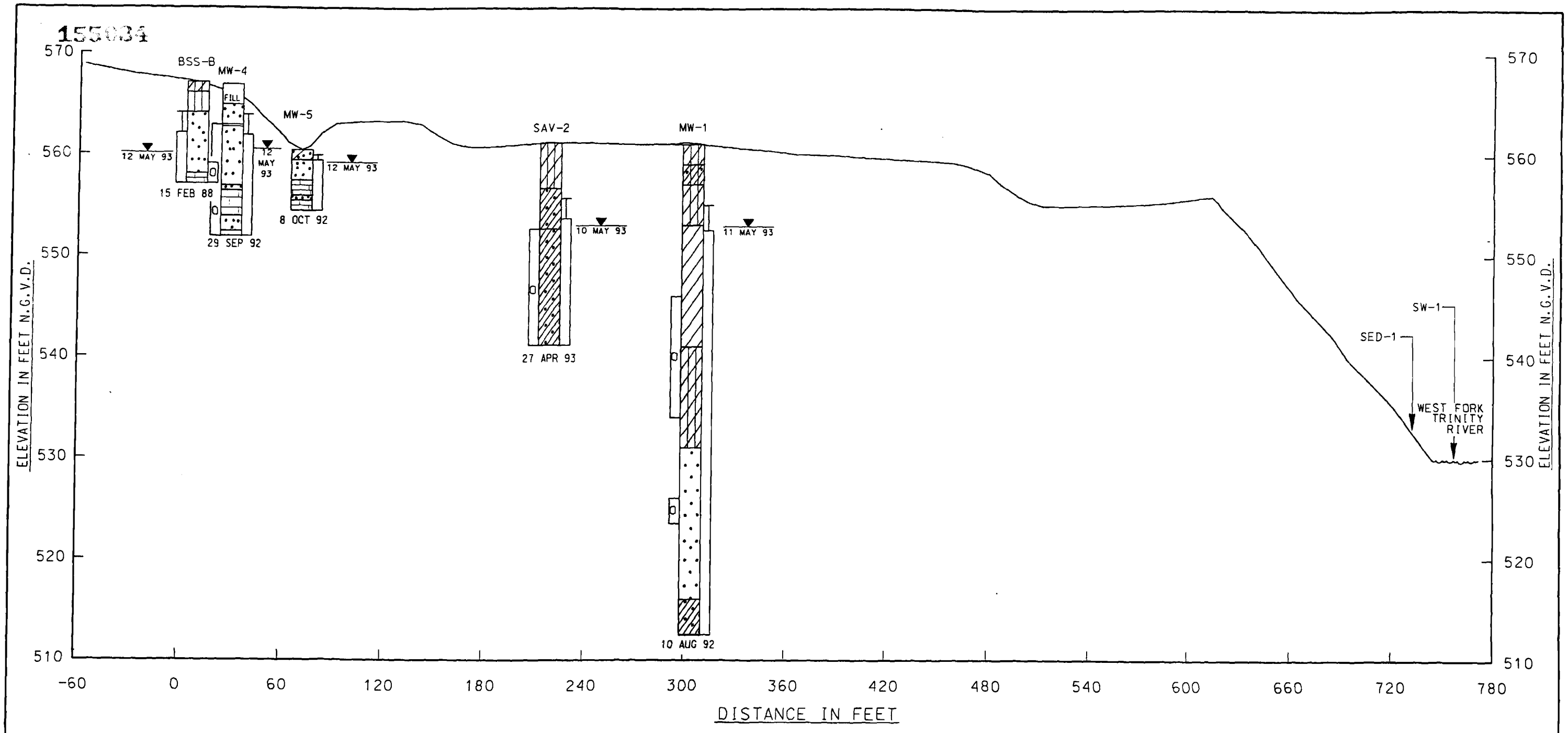
CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

PIEZOMETRIC SURFACE MAP MAY 1993

DATE: JULY 1993 | FIGURE 5

f:/ed/drawing/carswell/bss/plumes. Jul. 20, 1993 07:27:19

155034



LEGEND

10 MAY 93 GROUNDWATER ELEVATION AND DATE

I SANDED INTERVAL

SCREENED INTERVAL

O ODOR DETECTED DURING DRILLING

GENERAL NOTES:

1. FOR LOGS OF BORINGS, SEE APPENDIX C.
2. FOR WELL CONSTRUCTION DETAILS, SEE APPENDIX C.
3. FOR LOCATION OF PROFILES, SEE FIGURE 3, SITE MAP AND SAMPLE LOCATIONS.
4. STRATIGRAPHIC SYMBOLS SHOWN ARE IN ACCORDANCE WITH DESCRIPTION OF MATERIALS ON THE FIELD LOGS.

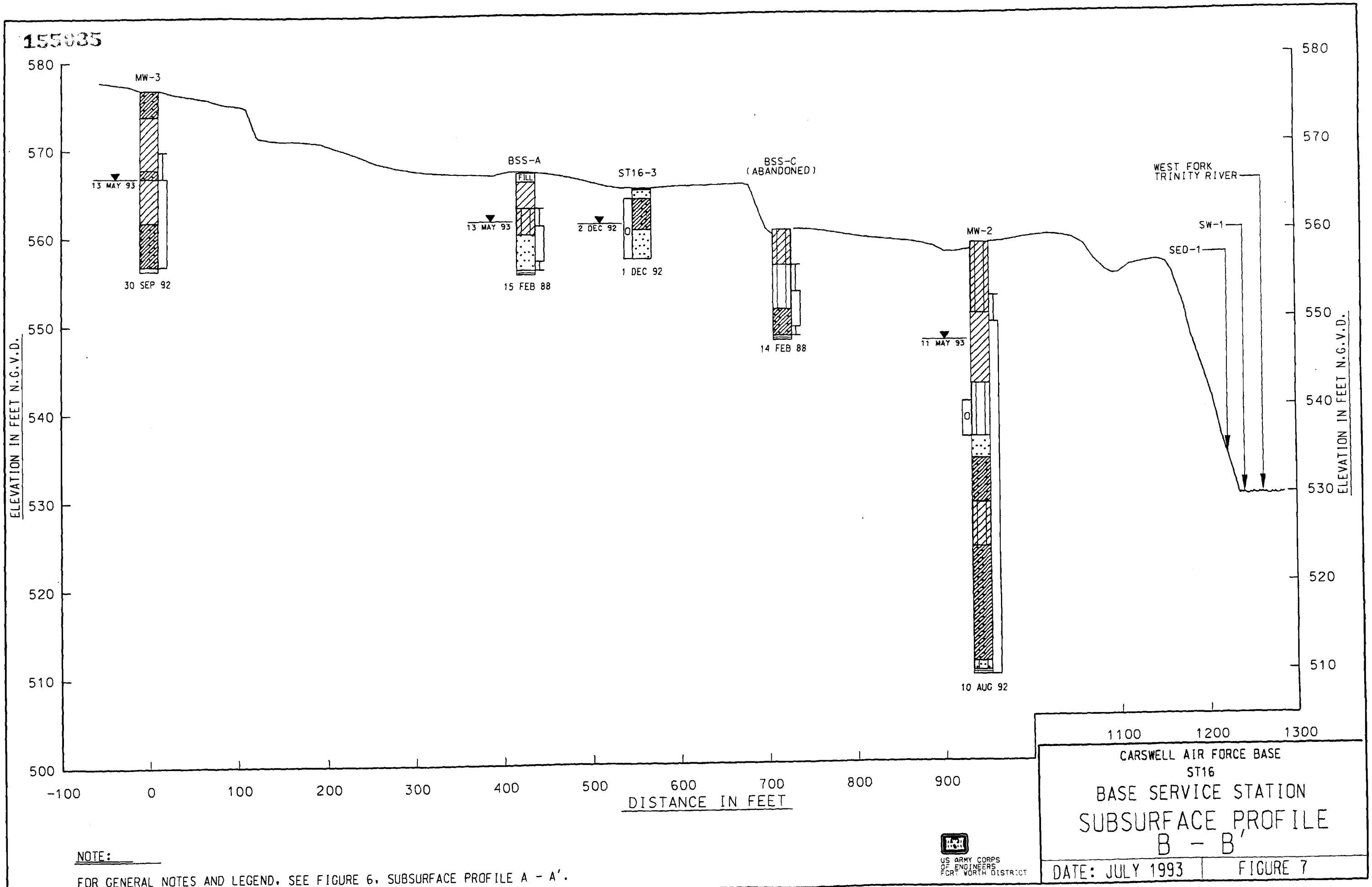
US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION
SUBSURFACE PROFILE
A - A'

DATE: JULY 1993 | FIGURE 6

f:/ed/drawing/carswell/bss/bssprof Jul. 14, 1993 11:55:22

155085



NOTE:

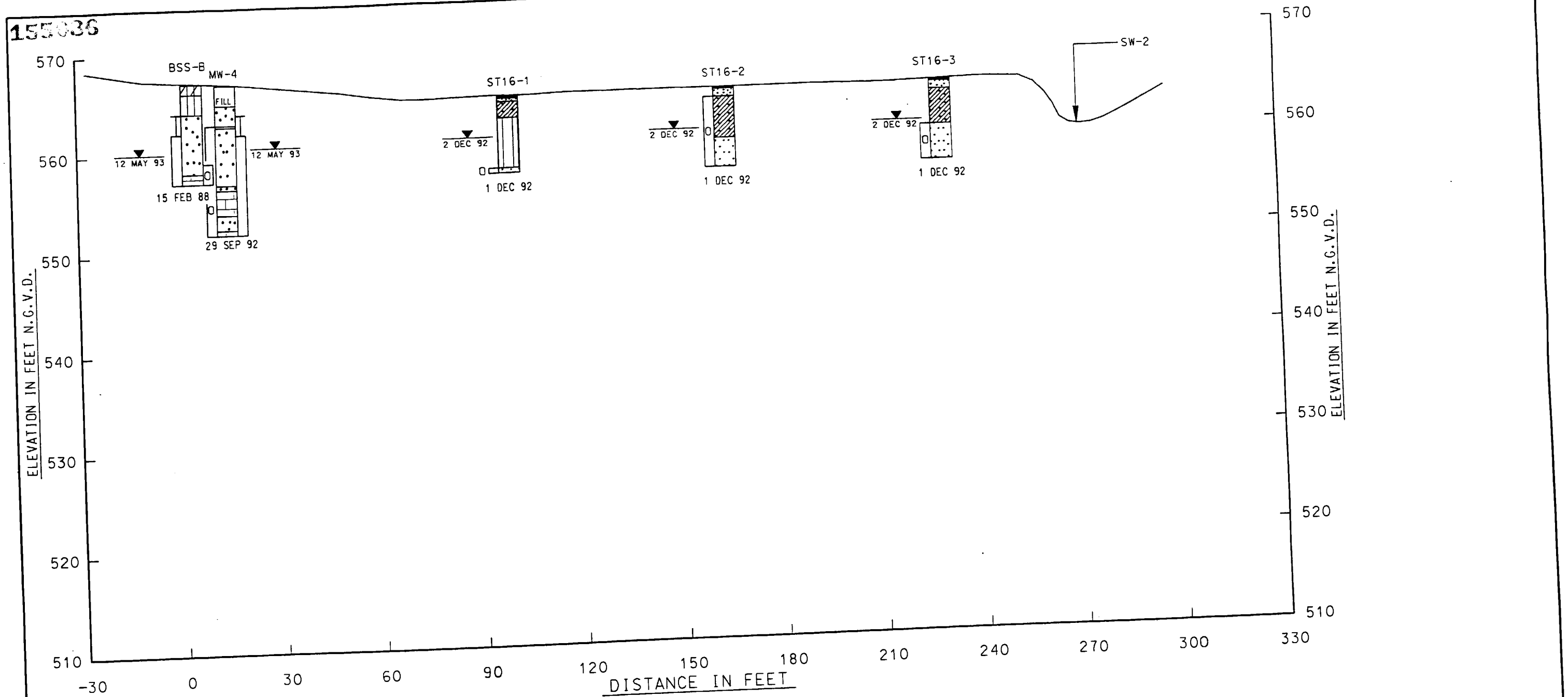
FOR GENERAL NOTES AND LEGEND, SEE FIGURE 6, SUBSURFACE PROFILE A - A'.

US ARMY CORPS
OF ENGINEERS
FORT WORTH DISTRICT

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION
SUBSURFACE PROFILE
B - B'

DATE: JULY 1993 | FIGURE 7

155036



NOTE:

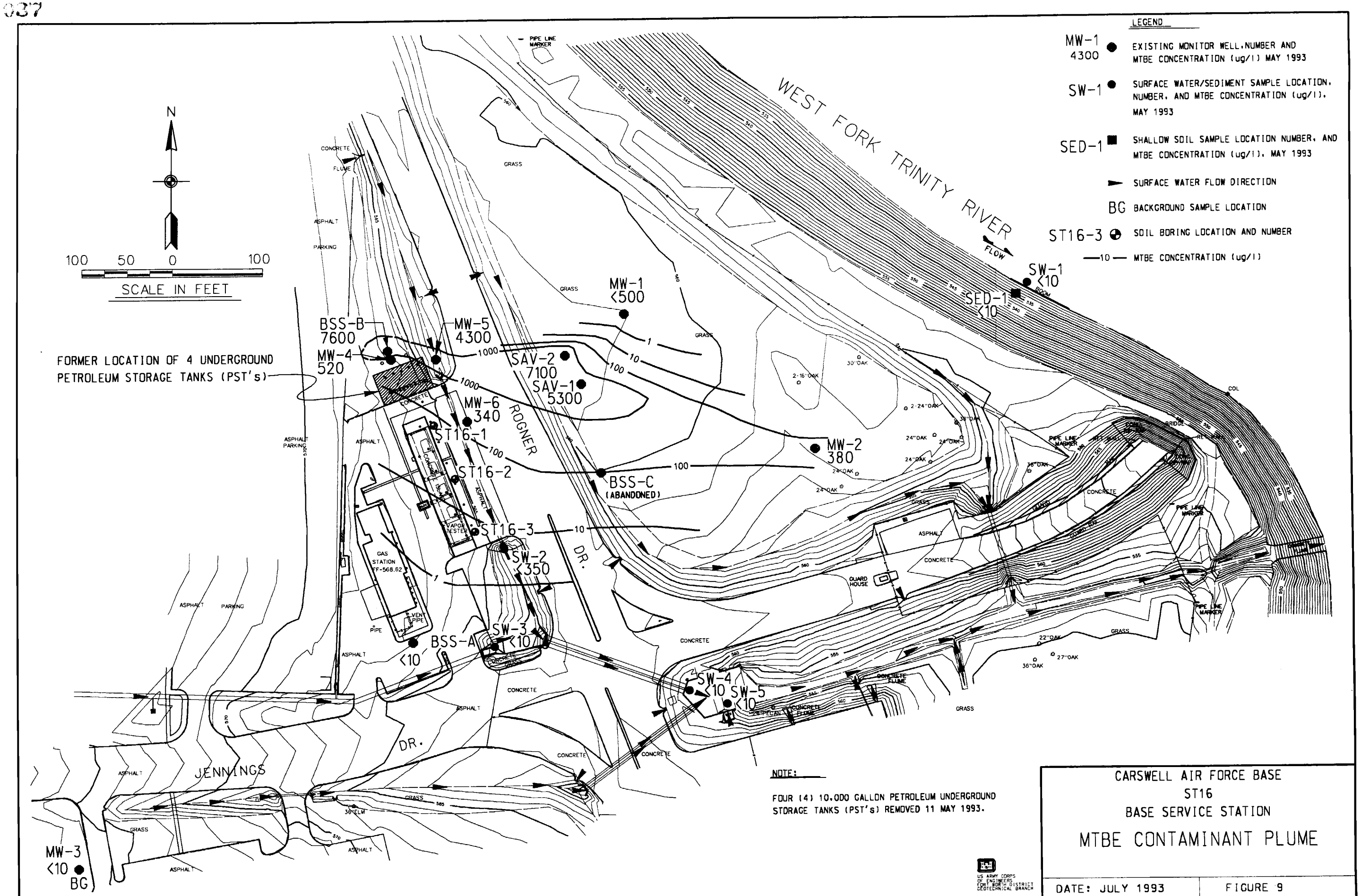
FOR GENERAL NOTES AND LEGEND, SEE FIGURE 6, SUBSURFACE PROFILE A - A'.

US ARMY CORPS
OF ENGINEERS
FORT WORTH DISTRICT

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION
SUBSURFACE PROFILE
C - C'

DATE: JULY 1993 | FIGURE 8

155037



NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

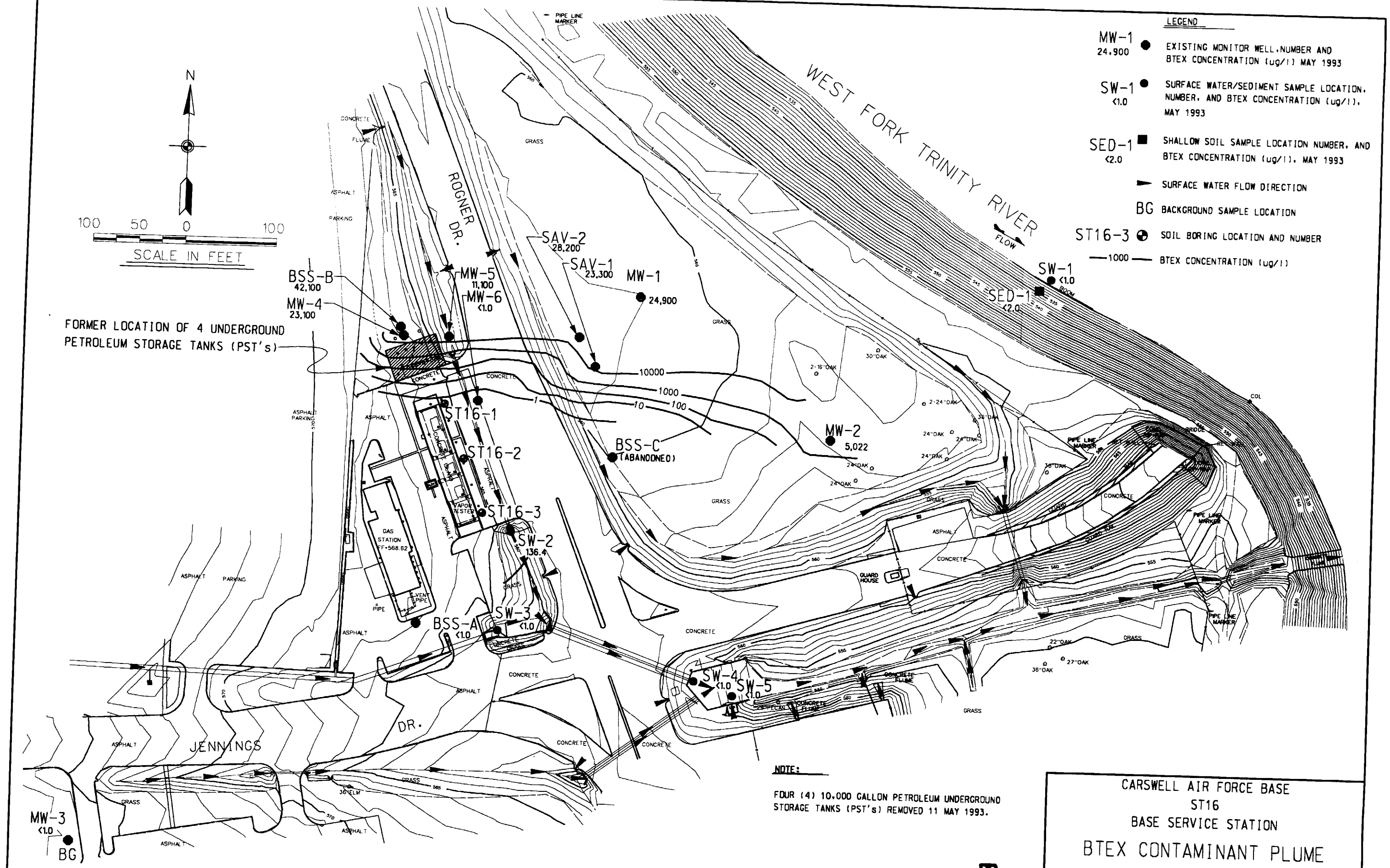
CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

MTBE CONTAMINANT PLUME

DATE: JULY 1993 | FIGURE 9

f:/ed/drawing/carswell/bss/mtbe.dg Jul. 20, 1993 11:43:51

155033



NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

BTEX CONTAMINANT PLUME

DATE: JULY 1993 | FIGURE 10

f:/ed/drawing/carswell/bss/btex.dg Jul. 21, 1993 06:43:16

155033

LEGEND

MW-1 8.2 ● EXISTING MONITOR WELL, NUMBER AND TRPH CONCENTRATION (mg/l) MAY 1993

SW-1 <0.2 ● SURFACE WATER/SEDIMENT SAMPLE LOCATION, NUMBER, AND TRPH CONCENTRATION (mg/l), MAY 1993

SED-1 117 ■ SHALLOW SOIL SAMPLE LOCATION NUMBER, AND TRPH CONCENTRATION (mg/l), MAY 1993

SURFACE WATER FLOW DIRECTION

BG BACKGROUND SAMPLE LOCATION

ST16-3 SOIL BORING LOCATION AND NUMBER

6 TRPH CONCENTRATION (mg/l)

N

100 50 0 100

SCALE IN FEET

FORMER LOCATION OF 4 UNDERGROUND PETROLEUM STORAGE TANKS (PST's)

WEST FORK TRINITY RIVER

FLOW

ROGNER DR.

JENNINGS DR.

SAV-1 11.8

SAV-2 9.0

MW-5 3.1

MW-6 <0.2

MW-1 8.2

BSS-B 10

MW-4 5

ST16-1

ST16-2

ST16-3

BSS-C (ABANDONED)

SW-1 <0.2

SED-1 117

MW-2 3.4

SW-2 0.3

SW-3 1.1

BSS-A 0.4

SW-4 <0.2

SW-5 <0.2

MW-3 <0.2

BG

ASPHALT PARKING

CONCRETE FLUME

GAS STATION TF-568.62

VENT PIPE

VAPOR RECOVERY SYSTEM

GUARD HOUSE

PIPE LINE MARKER

GRASS

CONCRETE

ASPHALT

BRIDGE

NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE

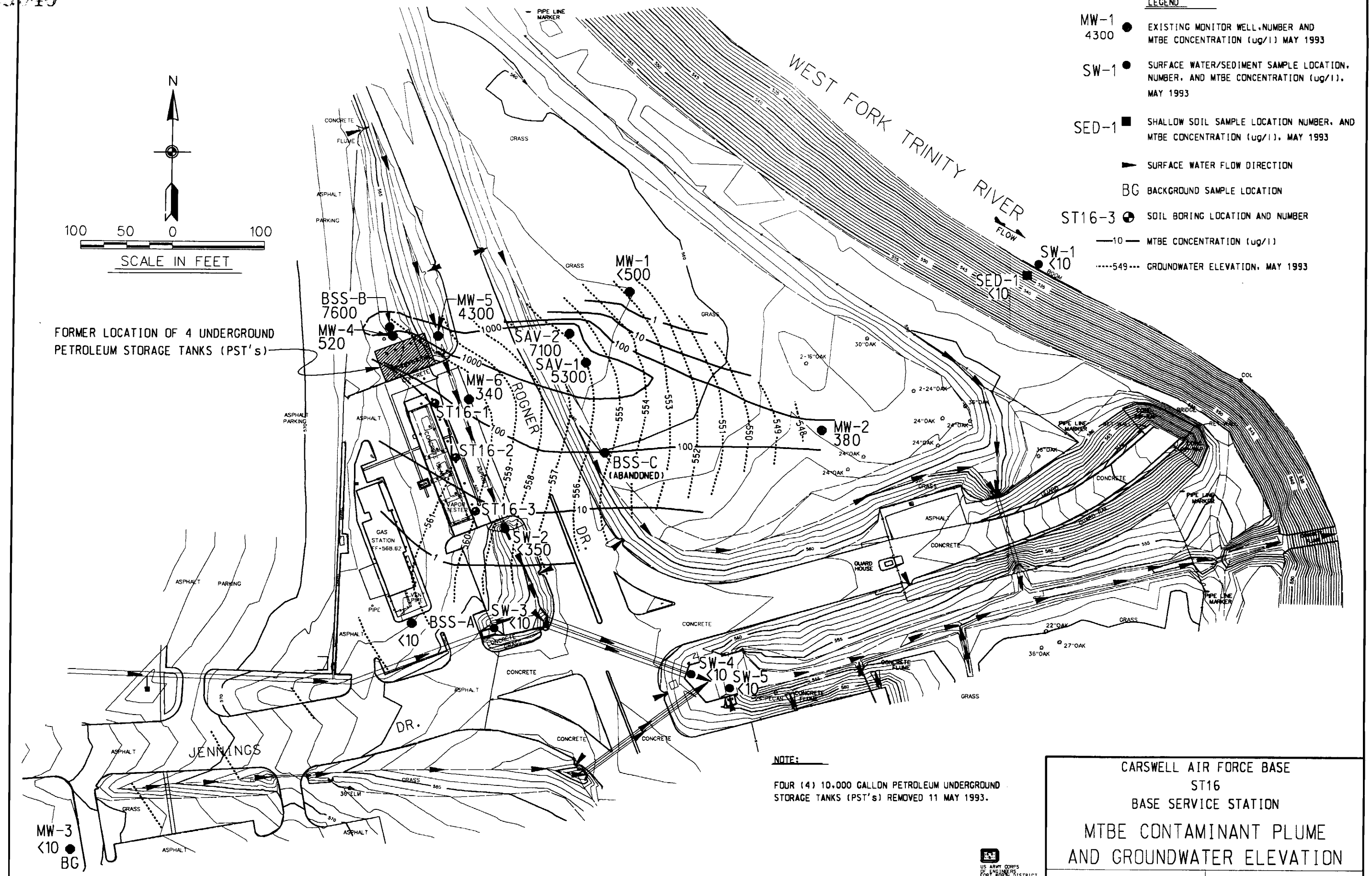
ST16

BASE SERVICE STATION

TRPH CONTAMINANT PLUME

DATE: JULY 1993

FIGURE 11



NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

MTBE CONTAMINANT PLUME AND GROUNDWATER ELEVATION

DATE: JULY 1993 | FIGURE 12

f:/ed/drawing/carswell/bss/mtbe.dg Jul. 20, 1993 11:46:41

155011

LEGEND

MW-1 24,900 ● EXISTING MONITOR WELL, NUMBER AND BTEX CONCENTRATION (ug/l) MAY 1993

SW-1 <1.0 ● SURFACE WATER/SEDIMENT SAMPLE LOCATION, NUMBER, AND BTEX CONCENTRATION (ug/l), MAY 1993

SED-1 <2.0 ■ SHALLOW SOIL SAMPLE LOCATION NUMBER, AND BTEX CONCENTRATION (ug/l), MAY 1993

SURFACE WATER FLOW DIRECTION

BG BACKGROUND SAMPLE LOCATION

ST16-3 SOIL BORING LOCATION AND NUMBER

—1000— BTEX CONCENTRATION (ug/l)

·····549··· GROUNDWATER ELEVATION, MAY 1993

N

100 50 0 100

SCALE IN FEET

FORMER LOCATION OF 4 UNDERGROUND PETROLEUM STORAGE TANKS (PST's)

WEST FORK TRINITY RIVER

FLOW

ROGNER DR.

JENNINGS DR.

SAV-2 28,200

SAV-1 23,300

MW-1 24,900

MW-5 11,100

MW-6 <1.0

BSS-B 42,100

MW-4 23,100

ST16-1

ST16-2

ST16-3

BSS-C (ABANDONED)

MW-2 5,022

SW-1 <1.0

SED-1 <2.0

SW-2 136.4

SW-3 <1.0

BSS-A <1.0

SW-4 <1.0

SW-5 <1.0

MW-3 <1.0

BG

GAS STATION FF-568.62

GUARD HOUSE

BRIDGE

10000

1000

100

10

1

NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE

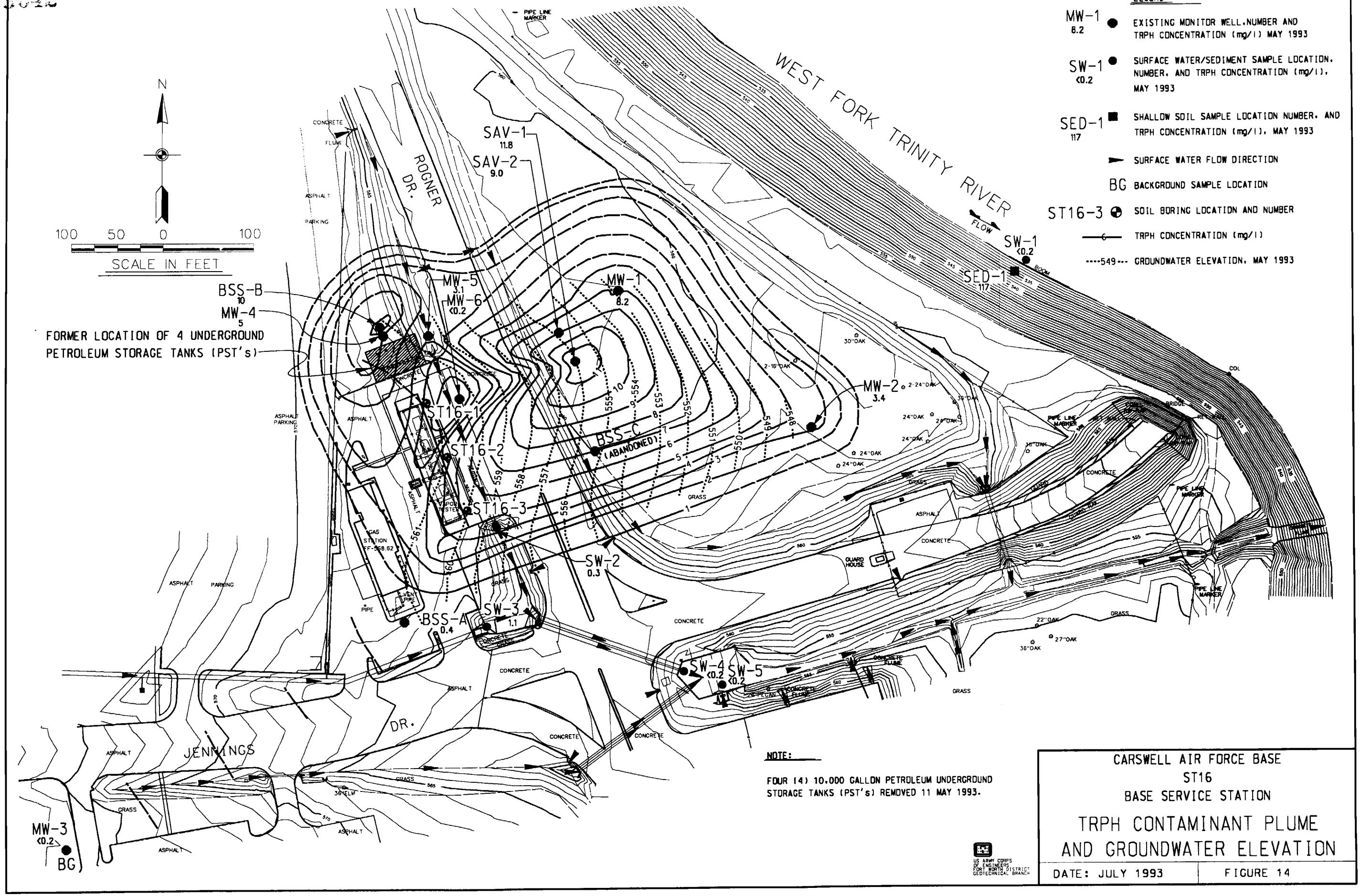
ST16

BASE SERVICE STATION

BTEX CONTAMINANT PLUME AND GROUNDWATER ELEVATION

DATE: JULY 1993 | FIGURE 13

15[illegible]13



NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST's) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

TRPH CONTAMINANT PLUME AND GROUNDWATER ELEVATION

DATE: JULY 1993 | FIGURE 14

f:/ed/drawing/carswell/bss/trph.dg Jul. 14, 1993 14:34:53

155013

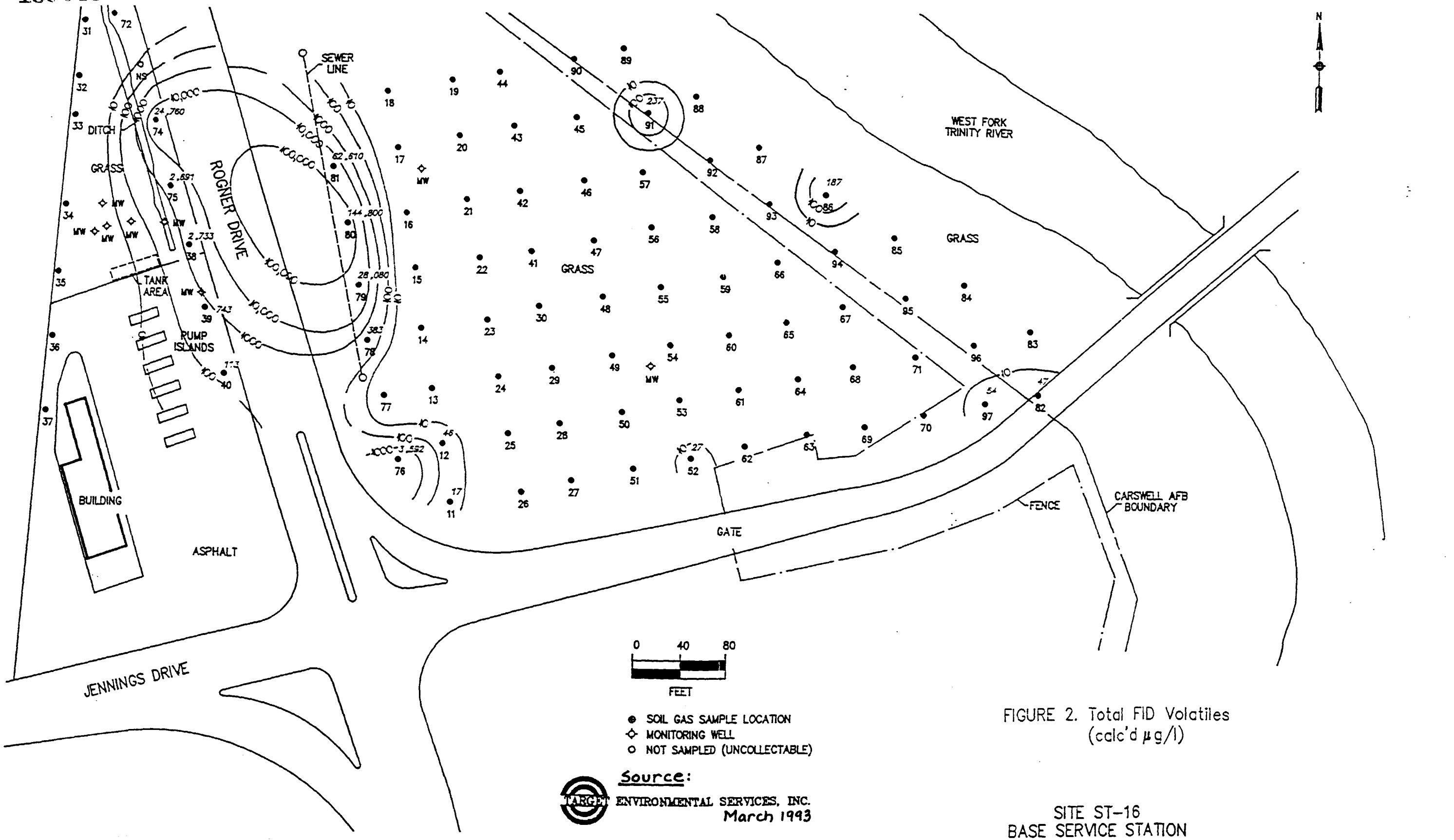


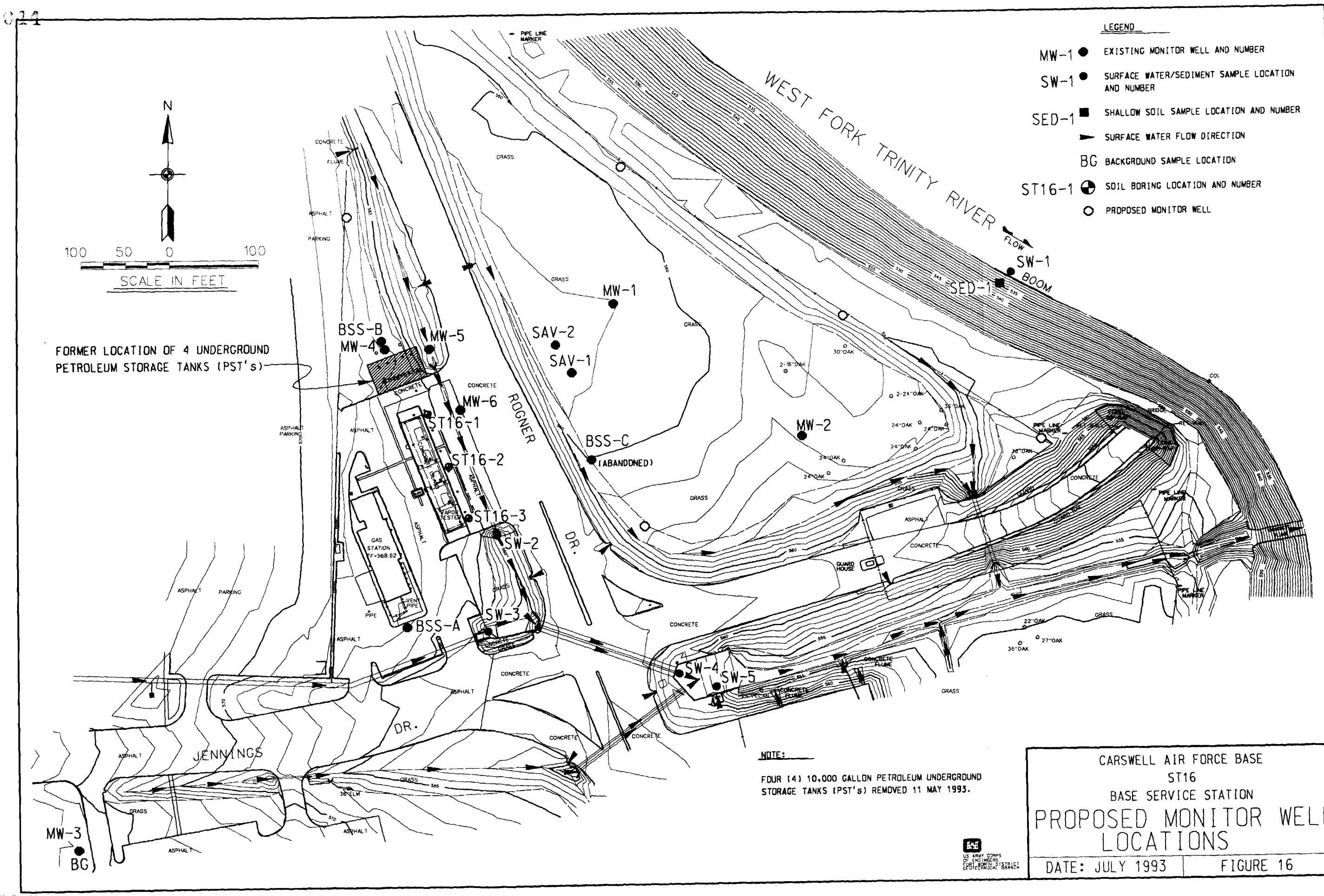
FIGURE 2. Total FID Volatiles
(calc'd µg/l)

SITE ST-16
BASE SERVICE STATION
CARSWELL AIR FORCE BASE
TEXAS

FIGURE 15.

Soil Gas Survey
Total FID Volatiles

155014



NOTE:

FOUR (4) 10,000 GALLON PETROLEUM UNDERGROUND STORAGE TANKS (PST'S) REMOVED 11 MAY 1993.

US ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT GEOTECHNICAL BRANCH

CARSWELL AIR FORCE BASE
ST16
BASE SERVICE STATION

PROPOSED MONITOR WELL LOCATIONS

DATE: JULY 1993 | FIGURE 16

CESWF-ED-GH (200-1a)

4 May 1993
Fitzgerald/rg/4-3221

MEMORANDUM THRU

CESWF-ED-GH

CESWF-ED-G

FOR FILES

SUBJECT: Sampling Plan for ST16 Base Service Station (BSS), Carswell Air Force Base (CAFB)

1. There are eight monitoring wells to be sampled at the BSS (ST16 BSS) at CAFB. Well designations are BSS-A, BSS-B, MW1, MW2, MW3, MW4, MW5, and MW6. These wells have never been sampled. There are also a surface water sample and a sediment sample to be taken in the West Fork Trinity River adjacent to the site. Well and river sample locations are shown on the enclosed map.

2. Persons performing this sampling event must meet all OSHA safety and training requirements in accordance with 29 CFR 1910 that apply to hazardous waste operations. Safety procedures contained in the enclosed Site Safety and Health Plan (SSHP) shall be followed while sampling at this site. A review of these procedures shall be performed by the Project Geologist prior to beginning this sampling event. Air monitoring shall be performed at each well during purging and sampling. Air monitoring forms shall be filled out daily. All forms contained in the SSHP, as they relate to this event, shall be filled out and submitted to the Project Geologist with other sampling documentation.

3. Sample wells for the following parameters: BTEX/MTBE, TRPH, and Total Dissolved Solids (TDS). There is also a possibility that free product may be floating on top of the ground water in some of the wells. If free product is encountered, sample it for General Scan (BTEX).

4. Purge and sample wells in the order listed on Table 1, if possible. This order is from suspected least contamination to suspected most contamination.

5. Prior to recording depth to ground water and depth to the bottom of the well, sound the well using gasoline gauging paste to determine if free product is present. If present, record the thickness shown on the paste. Prior to purging, measure the depth to ground water and depth of the well to the nearest 0.01 foot. Note on the Water Sampling Daily Worksheet the reference point from which depth measurements are made (i.e., top of well casing, top of protective casing, or ground level).

SUBJECT: Sampling Plan for ST16 Base Service Station (BSS), Carswell Air Force Base (CAFB)

6. Purge wells a minimum of five casing volumes prior to sampling. If a well goes dry and is slow to recharge, purge the well dry and sample as soon as recharge is adequate to fill all sample containers. Contain all purge water in drums. Note recharge rate on Field Data Form.

7. Purge water from different wells may be placed in the same drum. Because wells BSS-B, MW4, MW5, and MW6 are suspected to be the most contaminated, keep purge water from these wells separate from the purge water from wells BSS-A, MW1, MW2, and MW3. Label each drum with the appropriate well number(s) and collection date(s). Seal drums and store at the Federal Center outside the Core Drill Shop.

8. Prepare a trip blank (TB) at the beginning of each day of well sampling. Trip blanks to accompany well samples will be analyzed for BTEX/MTBE. If sampling equipment will be decontaminated between wells during this sampling event, obtain an equipment blank (EB), or rinsate, sample immediately prior to sampling wells BSS-A and MW5 for all parameters except GS(BTEX). Note the well number on the EB.

9. If free product was present prior to purging, attempt to sample for GS(BTEX) prior to obtaining any other samples. If possible, fill the sample container completely. Record the thickness of product recovered in the bailer when sampling. Obtain the remainder of the samples, preserving in accordance with the procedures shown on Table 2. Fill out appropriate chain of custody forms, seal in ice chests, and deliver to SWD Laboratory within 24 hours of sampling.

10. The surface water and the sediment sample should each be taken within the limits of the boomed area on the west bank of the West Fork Trinity River. Free product has been seen discharging into the river at this location. Ideally, a sample of the surface water containing evidence of free product should be obtained, and the sediment sample should be taken where product is discharging. Observe this location frequently while performing the well sampling to try and obtain both samples during free product discharge. The sediment sample should be taken at the same time the surface water sample is obtained. If at the end of well sampling, conditions have not changed at the river location, take a representative sample of the surface water and sediment. Fill out the appropriate field sampling forms for these samples.

11. The surface water sample should be collected for VOCs, BTEX/MTBE, TRPH, and PAH. If the surface water sample is collected at the time of suspected free product discharge, an additional water sample should be collected for GS(BTEX), trying to obtain as high a concentration of free product as possible in the sample container. Prepare a TB for VOC analysis to accompany the

SUBJECT: Sampling Plan for ST16 Base Service Station (BSS), Carswell Air Force Base (CAFB)

surface water sample. Fill out the appropriate chain of custody forms and deliver these samples to SWD Lab within 24 hours of collecting.

12. The sediment sample should be collected for BTEX/MTBE, TRPH, and PAH. Refer to Table 2 for sample containers and preservation procedures. A TB is not necessary for this sample. Fill out the appropriate chain of custody form and deliver the sample to SWD Lab within 24 hours of collecting.

13. Keys for monitoring wells BSS-A and BSS-B must be obtained from CAFB. Flush mounted wells will need tools to unscrew the protective covers. Wells are not dedicated and will require pumps and/or bailers for purging and sampling. A key to access the river area will be provided with this request. Drums are available at the Core Drill Shop at the Federal Center.

14. The CAFB POC for this project is CPT Erin Manning, telephone 817/782-6250.

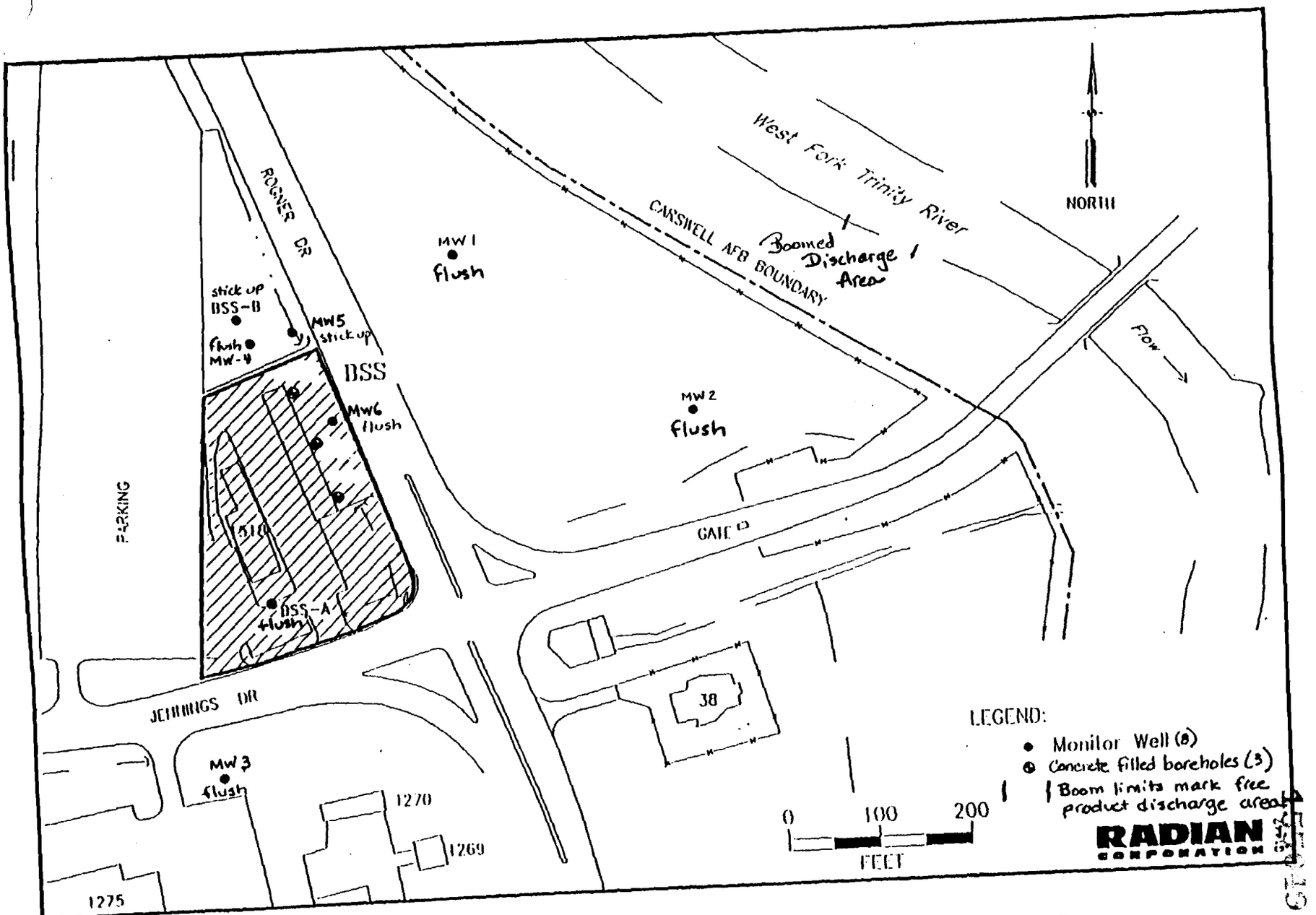
15. The Project Geologist for this job is Deborah Fitzgerald, 817/334-3221. Provide copies of all sampling documents to Ms. Fitzgerald within 1 week of completion of sampling.

16. Charge number is RK350 15251 80176.

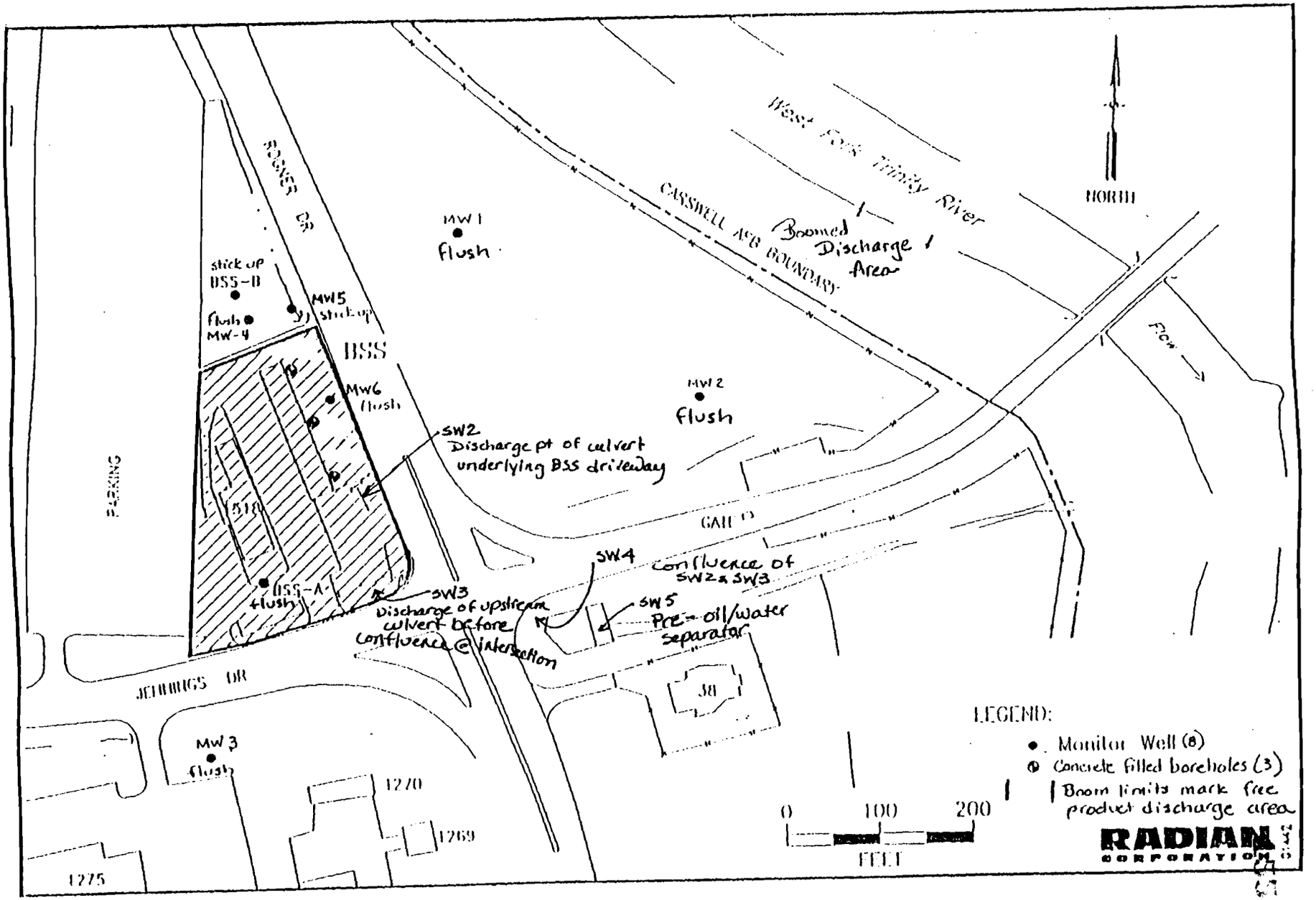
Deborah C. Fitzgerald

Encls

Deborah C. Fitzgerald
Geologist, CESWF



Location of Monitor Wells, Site BSS, East Area, Carswell AFB, Texas



Revised 5/12/93

Location of Monitor Wells, Site BSS, East Area, Carswell AFB, Texas

Table 1. Samples for ST16 BSS, CAFB

Samples	BTEX/MTBE Method 8020	TRPH Method 418.1	TDS Method 160.1	PAH Method 8310	VOC Method 8240	GS (BTEX) Method 8000	Field pH/Cond/Temp
TB1	x						
MW3	x	x	x			x(P)	x
MW2	x	x	x			x(P)	x
MW1	x	x	x			x(P)	x
EBA	x	x	x				
BSS-A	x	x	x			x(P)	x
TB2	x						
BSS-B	x	x	x			x(P)	x
MW4	x	x	x			x(P)	x
MW6	x	x	x			x(P)	x
EB5	x	x	x				
MW5	x	x	x			x(P)	x
MW5Q	x	x	x				
MW5QC	x	x	x				
TBS3	x				x		
SW1	x	x		x	x	x(P)	
SED1	x	x		x			

Samples = Perform well sampling in the order indicated.
GS(BTEX) = General scan to include BTEX.
x(P) = Possible free product sample if encountered.
TB = Travel blank. Prepare one (1) at beginning of each sampling day. Carry in VOC ice chest.
EB = Equipment blank. Prepare only if sampling equipment has been decontaminated. Take immediately prior to sampling well indicated.

Table 1. Samples for ST16 BSS, CAFB (Revised 5/12/93)

Samples	BTEX/MTBE Method 8020	TRPH Method 418.1	TDS Method 160.1	PAH Method 8310	VOC Method 8240	GS (BTEX) Method 8000	Field pH/Cond/Temp
TB1	x						
MW3	x	x	x			x(P)	x
MW2	x	x	x			x(P)	x
MW1	x	x	x			x(P)	x
EBA	x	x	x				
BSS-A	x	x	x			x(P)	x
TB2	x						
BSS-B	x	x	x			x(P)	x
MW4	x	x	x			x(P)	x
MW6	x	x	x			x(P)	x
EB5	x	x	x				
MW5	x	x	x			x(P)	x
MW5Q	x	x	x				
MW5QC	x	x	x				
TBS3	x				x		
SW1	x	x		x	x	x(P)	
SED1	x	x		x			
TB3	x						
SW2	x	x					
SW2QC	x	x					
SW2QA	x	x					
SW3	x	x					
SW4	x	x					
SW5	x	x					

Revised 5/12/93

Samples = Perform well sampling in the order indicated.
GS(BTEX) = General scan to include BTEX.
x(P) = Possible free product sample if encountered.
TB = Travel blank. Prepare one (1) at beginning of each sampling day. Carry in VOC ice chest.
EB = Equipment blank. Prepare only if sampling equipment has been decontaminated.

Table 2. Containers and Preservation for ST16 BSS, CAFB

WATER			
Parameter	No.	Type Container	Preservation
BTEX/MTBE	3	40-ml glass vial	Full; HCl pH<2
TRPH	2	1-liter amber glass bottle	HCl pH<2
TDS	1	1-liter plastic bottle	None
GS(BTEX)	1	125-ml amber glass bottle	Full or >100 ml
PAH	1	1-liter amber glass bottle	Full
VOC	3	40-ml glass vial	Full; HCL pH<2
SEDIMENT			
BTEX/MTBE	2	40-ml glass vial or 8-oz jar	Full
TRPH	1	8-oz wide mouth glass jar	Full
PAH	1	8-oz wide mouth glass jar	Full

NOTES:

1. All samples are to be kept on ice at all times.
2. A minimum of 100 ml of free product is needed for a GS(BTEX) analysis.
3. Keep all BTEX/MTBE, VOC, GS(BTEX), TB, and TRPH water samples together in an ice chest.

WELL SAMPLING DAILY WORKSHEET

Project:	Site:				
Monitor Well #					
Date Purged					
Casing Dia/Type					
Depth Reference Pt.					
Total Depth					
Depth to Water					
Water in Feet					
Gallons to Purge					
Purging Started					
Purging Stopped					
Avg. Flow Rate					
Total Amt. Purged					
Actual Purge Time					
Purging System Used					
Technician Initials					
Date Sampled					
New Depth to Water					
Sampling Started					
Sampling Stopped					
Sampling Method Used					
Type Samples Taken	/ /	/ /	/ /	/ /	/ /
Time/Field Meas.					
pH (4)					
Conductivity (4)					
Temperature					
Turbidity					
Ice Chest #(s)					
Custody Seal #(s)					
V/O Chest #(s)					
Custody Seal #					
Bus Bill Number					
Date/Time Shipped	/	/	/	/	/
Vented/Locked/Key#	/ /	/ /	/ /	/ /	/ /
Signature					

WATER SAMPLES FIELD DATA FORM

PROJECT:_____ DATE:_____

SITE:_____ TYPE OF SAMPLE:_____

WELL NO: _____ LOCATION:_____

CSG DIAM _____ CSG TYPE: _____

RISER ELEV. _____

DEPTH TO WATER FROM TOP OF CASING: _____ TIME:_____

RATE OF RECHARGE: _____

DEPTH TO WATER AT TIME OF SAMPLING: _____ TIME:_____

WATER TABLE: _____ MEASURING DEVICE: _____

PH: _____ _____ TIME: _____ TYPE:_____

PH: _____ _____

CONDUCTIVITY, umhos/cm TIME: _____ TYPE: _____

_____ _____ TEMPERATURE: _____

_____ _____ TURBIDITY: _____

CHEST# _____ C/SEAL# _____ BUS BILL# _____

CHEST# _____ C/SEAL# _____ BUS BILL# _____

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

_____

_____

_____

_____

_____

_____

_____

_____

SAMPLE COLLECTOR: _____

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location_____ Date_____

Site ST16 BSS Discharge Area Sample No._____

Weather Conditions_____

_____

Stream Conditions_____

_____

Depth of stream_____

Sampling Depth_____ Start/End Times_____

Sample Containers Collected:

BTEX/MTBE _____
TRPH _____
_____
_____
_____
_____
_____
_____

QA/QC Samples Collected:

N/A
_____
_____
_____
_____
_____
_____
_____

Rinsate Sample to be analyzed for N/A

Cooler No._____

Remarks/Comments_____

_____

_____

_____

_____

_____

Sampler's Signature_____

SURFACE WATER SAMPLING 155057

FIELD DATA SHEET

Location_____ Date_____

Site ST16 BSS Discharge Area Sample No._____

Weather Conditions_____

_____

Stream Conditions_____

_____

Depth of stream_____

Sampling Depth_____ Start/End Times_____

Sample Containers Collected:

BTEX/MTBE _____
TRPH _____
_____
_____
_____
_____
_____
_____

QA/QC Samples Collected:

BTEX/MTBE _____
TRPH _____
_____
_____
_____
_____
_____
_____

Rinsate Sample to be analyzed for N/A

Cooler No._____

Remarks/Comments_____

_____

_____

_____

_____

_____

Sampler's Signature_____

SEDIMENT SAMPLING

FIELD DATA SHEET

Location West Fork Trinity River, CAFB Date _____

Site ST16 BSS Discharge Area Sample No. _____

Weather Conditions _____

_____

Stream Conditions _____

_____

Depth of stream _____

Sampling Depth _____ Start/End Times _____

Sample Containers Collected:		QA/QC Samples Collected:
BTEX/MTBE	_____	N/A
TRPH	_____	_____
PAH	_____	_____
	_____	_____
	_____	_____
	_____	_____
_____	_____	_____
_____	_____	_____

Rinsate Sample to be analyzed for N/A

Cooler No. _____

Remarks/Comments _____

_____

_____

_____

_____

_____

Sampler's Signature _____

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location West Fork Trinity River, CAFB Date _____

Site ST16 BSS Discharge Area Sample No. _____

Weather Conditions _____

_____

Stream Conditions _____

_____

Depth of stream _____

Sampling Depth _____ Start/End Times _____

Sample Containers Collected:		QA/QC Samples Collected:
BTEX/MTBE	_____	N/A
TRPH	_____	_____
VOC	_____	_____
PAH	_____	_____
	_____	_____
	_____	_____
_____		_____
_____		_____

Rinsate Sample to be analyzed for N/A

Cooler No. _____

Remarks/Comments _____

_____

_____

_____

_____

_____

Sampler's Signature _____

MIPR# _____	SWD LAB#	CHEST#	TEMP.

CHAIN OF CUSTODY
GROUNDWATER SAMPLES

155039

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AFB	Date:_____	Time:_____
Site: ST16 Base Service Station (BSS)	Well No.	_____
Proj. Geologist: Deborah Fitzgerald	Phone No. (817) 334-3221	

CONTAINERS

Glass	Plastic	Vial	Chest No.	Custody Seal

* LEGEND: [] = 1L plastic () = 1L amber glass {} = 40ml glass vial
<> = 125ml amber glass

PARAMETERS

	Parameter	Test Method	*
	BTEX/MTBE	8020	{3}
	TRPH	418.1	(2)
	Total Dissolved Solids	160.1	[1]
	General Scan (BTEX)	8000	<1>

CUSTODY RECORD

Relinquished by	Received by	Date	Time
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

MIPR# _____	SWD LAB#	CHEST#	TEMP.

CHAIN OF CUSTODY
SURFACE WATER SAMPLES

150081

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AFB	Date:_____	Time:_____
Site: ST16 Base Service Station (BSS)	Well No.	_____
Proj. Geologist: Deborah Fitzgerald	Phone No. (817) 334-3221	

CONTAINERS

Glass	Plastic	Vial	Chest No.	Custody Seal

* LEGEND: [] = 1L plastic () = 1L amber glass {} = 40ml glass vial
<> = 125ml amber glass

PARAMETERS

	Parameter	Test Method	*
	Volatile organics (VOCs)	8240	{3}
	BTEX/MTBE	8020	{3}
	TRPH	418.1	(2)
	PAH	8310	(1)

CUSTODY RECORD

Relinquished by	Received by	Date	Time
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

MIPR# E87930087	SWD LAB#	CHEST#	TEMP.

CHAIN OF CUSTODY
SURFACE WATER SAMPLES

155082

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AFB Date:_____ Time:_____

Site: ST16 Base Service Station (BSS) Well No. _____

Proj. Geologist: Deborah Fitzgerald Phone No. (817) 334-3221

CONTAINERS

Glass	Plastic	Vial	Chest No.	Custody Seal

* LEGEND: [] = 1L plastic () = 1L amber glass {} = 40ml glass vial
<> = 125ml amber glass

PARAMETERS

	Parameter	Test Method	*
	BTEX/MTBE	8020	{3}
	TRPH	418.1	(2)

CUSTODY RECORD

Relinquished by	Received by	Date	Time

MIPR#	SWD LAB#	CHEST#	TEMP.

CHAIN OF CUSTODY
SOIL SAMPLES

150083

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AIR FORCE BASE Date:_____ Time:_____

Site: ST16 Base Service Station (BSS) Sample No. _____

Proj. Geologist: Deborah Fitzgerald Phone No. (817) 334-3221

CONTAINERS

No. of jars per sample	Sample No.(s)				Total	C/Seal No.

* LEGEND: [] = 1/2L Jar {} = 40ml Vials

PARAMETERS

	Parameter	Test Method	*
	BTEX/MTBE	8020	{2}
	TRPH	418.1	[1]
	PAH	8310	[1]

CUSTODY RECORD

Relinquished by	Received by	Date	Time

MIPR# _____	CHEST#	C/SEAL#

CHAIN OF CUSTODY
TRAVEL BLANKS

15[illegible]1

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AFB Date:_____ Time:_____

Site: ST16 Base Service Station (BSS) Sample No. _____

Proj. Geologist: Deborah Fitzgerald Phone No. (817) 334-3221

Analysis Requested: BTEX/MTBE Method 8020

Water Source: _____

Signature of Sampler: _____

SAMPLES CONTAINED IN THIS COOLER

No. of Vials	Sample Number	SWD Lab Number
	Total No. of Vials Shipped	

CUSTODY RECORD

Relinquished by	Received by	Date	Time
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

MIPR# _____	SWD LAB#	CHEST#	TEMP.

CHAIN OF CUSTODY
RINSATE WATER SAMPLES

155035

U.S. Army Corps of Engineers
Fort Worth District, Fort Worth, Texas

Location: CARSWELL AFB Date:_____ Time:_____

Site: ST16 Base Service Station (BSS) Sample No. _____

Proj. Geologist: Deborah Fitzgerald Phone No. (817) 334-3221

CONTAINERS

Glass	Plastic	Vial	Chest No.	Custody Seal

* LEGEND: [] = 1L Plastic () = 1L Amber glass {} = 40ml Glass vial

PARAMETERS

	Parameter	Test Method	*
	BTEX/MTBE	8020	{3}
	TRPH	418.1	(2)
	Total Dissolved Solids	160.1	[1]
	PAH	8310	(1)

CUSTODY RECORD

Relinquished by	Received by	Date	Time
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

AIR MONITORING LOGS

SITE:

ACTIVITY:

DATE:

WEATHER CONDITIONS: TEMP. (F)

HUMIDITY (%)

TIME:

PERSON MONITORING:

PID or FID

MODEL NO.: SERIAL NO:

CALIBRATION DATA:

DATE: TIME:

GAS USED: CONC. OF GAS:

READING:

LAMP USED: EV: SPAN:

Readings:

Time

Conc.

155037

COMBUSTIBLE GAS/OXYGEN METER

CG/O2 METER DATA:

MODEL NO: SERIAL NO:

CALIBRATION: DATE: TIME:

GAS USED: READING:

READINGS:	LOCATION	%LEL	%O2

DETECTOR TUBES

TYPE OF TUBE: DETECTION LIMITS:

TUBE NO.: EXPIRATION DATE:

LOCATION	READING

SEDIMENT SAMPLING

FIELD DATA SHEET

Location West Fork Trinity River, CAFB Date 5/5/13

Site ST16 BSS Discharge Area Sample No. SED1

Weather Conditions Rainy, cool, cloudy

Stream Conditions flowing a clear

Depth of stream

Sampling Depth 0-2" Start/End Times 1500 - 1515

Sample Containers Collected:

BTEX/MTBE	2
TRPH	1
PAH	1

QA/QC Samples Collected: N/A

Rinsate Sample to be analyzed for N/A

Cooler No. C82

Remarks/Comments Strong gasoline odor, sample was taken 4' above surface of Trinity River.

Sampler's Signature J Haus

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location West Fork Trinity River, CAFB Date 5/5/93

Site ST16 BSS Discharge Area Sample No. SW1

Weather Conditions Rainy, Cool, Cloudy

Stream Conditions Flowing & Clear

Depth of stream N/A

Sampling Depth Surface Sample Start/End Times 1500 - 1515

Sample Containers Collected:		QA/QC Samples Collected:
BTEX/MTBE	3	N/A
TRPH	2	
VOC	3	
PAH	1	

Rinsate Sample to be analyzed for N/A

Cooler No. C-82

Remarks/Comments Slight Gasoline odor along bank, sample was taken underneath large Rock adjacent to edge of bank and directly below strong gasoline odor.

Sampler's Signature J. Hall

155071

WELL SAMPLING DAILY WORKSHEET

Project: Carswell AFB		Site: ST16 Base Service Station			
Monitor Well #	SAY-1	SAY-2			
Date Purged	5/10/93	5/10/93			
Casing Dia/Type	4"	4"			
Depth Reference Pt.	W.C.	W.C.			
Total Depth	22.50	22.30			
Depth to Water	11.64	10.80			
Water in Feet	10.86	11.50			
Gallons to Purge	35.89	38.35			
Purging Started	1310	1355			
Purging Stopped	1330	1420			
Avg. Flow Rate	1.75 G.P.M.	1.52 G.P.M.			
Total Amt. Purged	35 gal	38 gal			
Actual Purge Time	20min	25min			
Purging System Used	Hand Bail	Hand Bail			
Technician Initials	J.H. D.C.	J.H. D.C.			
Date Sampled	5/10/93	5/10/93			
New Depth to Water	11.65	10.78			
Sampling Started	1500	1545			
Sampling Stopped	1530	1615			
Sampling Method Used	Disp Bailer	Disp Bailer			
Type Samples Taken	2/1/3	2/1/3	/ /	/ /	/ /
Time/Field Meas.	1500	1545			
pH (4)	9730 9720 9710 9710	1024 1023 1024 1024			
Conductivity (4)	7.75 7.76 7.71 7.67	7.40 7.38 7.33 7.32			
Temperature	70.5	68.5			
Turbidity	yes	Turbid			
Ice Chest #(s)	C-75	C-75			
Custody Seal #(s)	51093C75	51093C75			
V/O Chest #(s)	C-75	C-75			
Custody Seal #	51093C75	51093C75			
Bus Bill Number	000953871	000953801			
Date/Time Shipped	5/10/93/1730	5/10/93/1730	/	/	/
Vented/Locked/Key#	No/No/No	No/No/No	/ /	/ /	/ /
Signature	J. Hall	J. Hall			

Page ___ of ___

155072

WATER SAMPLES FIELD DATA FORM

PROJECT: Carswell AFB DATE: 5/6/93

SITE: ST16 Base Service Station TYPE OF SAMPLE: Water

WELL NO: SS4-1 LOCATION: Base Service Station

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. 39"

DEPTH TO WATER FROM TOP OF CASING: 11.64 TIME: 1310

RATE OF RECHARGE: .199

DEPTH TO WATER AT TIME OF SAMPLING: 11.65 TIME: 1500

WATER TABLE: _____ MEASURING DEVICE: Sample Pro - GED

PH: 9730 9720 TIME: 1500 TYPE: Hydac

PH: 9710 9710

CONDUCTIVITY, umhos/cm TIME: 1500 TYPE: Hydac

7.75 7.76 TEMPERATURE: 70.5

7.71 7.67 TURBIDITY: yes

CHEST# C-75 C/SEAL# S1C93C75 BUS BILL# 200495 3901

CHEST# C-75 C/SEAL# S1C93C75 BUS BILL# 200495 3901

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

Strong Gasoline Odor, Petro Film Floating on Purge Water, Very Murky and well appears to be undeveloped. Plastic shaving in Purge Water - Remediation Wells for pumping ground water - No gasoline was DECTED USING PASTE

75° Windy & Cloudy

SAMPLE COLLECTOR: J Heald & D. Garnett

15[illegible]

WATER SAMPLES FIELD DATA FORM

PROJECT: Caswell AFB DATE: 5/10/93

SITE: ST16 - Base Service Station TYPE OF SAMPLE: Water

WELL NO: SAV-2 LOCATION: BSS

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. 31"

DEPTH TO WATER FROM TOP OF CASING: 10.80 TIME: 1355

RATE OF RECHARGE: .998

DEPTH TO WATER AT TIME OF SAMPLING: 10.78 TIME: 1545

WATER TABLE: _____ MEASURING DEVICE: Sample Pro QCD

PH: 1024 1023 TIME: 1545 TYPE: Hydac

PE: 1024 1024

CONDUCTIVITY, umhos/cm TIME: 1545 TYPE: Hydac

740 7.38 TEMPERATURE: 685

7.33 7.32 TURBIDITY: yes

CHEST# C-75 C/SEAL# 51093675 BUS BILL# 200195 3801

CHEST# C75 C/SEAL# 51093675 BUS BILL# 200195 3801

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

Strong gasoline odor, slight film floating on purge water, very murky and well appears to be underdeveloped. Plastic shavings in purge water. Remediation wells for pumping ground water.

75° Windy & Cloudy

SAMPLE COLLECTOR: J. Hall & D. Jarnett

153074

COMBUSTIBLE GAS/OXYGEN METER

CG/O2 METER DATA:

MODEL NO: MX251 SERIAL NO: LR81532

CALIBRATION: DATE: 5/10/93 TIME: 1245

GAS USED: READING:

READINGS:	LOCATION		%LEL	%O2
	SAV-1	pre pumping (1300)	-000	-000 (1500)
	SAV-2	" (1350)	-000	-000 (1545)

DETECTOR TUBES

TYPE OF TUBE: Gasoline DETECTION 5ppm

LIMITS: 30-1000 PPM

TUBE NO.: 101L EXPIRATION Nov 93

DATE: 5/10/93

LOCATION		READING
SAV-1	Time 1500	00
SAV-2	Time 1600	00

153875

WELL SAMPLING DAILY WORKSHEET

Project: CAFB		Site: ST16 BSS			
Monitor Well #	MW2	MW1			
Date Purged	5/11/93	5/11/93			
Casing Dia/Type	4"	4"			
Depth Reference Pt.	W.C IS 6" below N.G.	W.C IS 1" ABOVE N.G.			
Total Depth	45.0	42.12			
Depth to Water	10.14	7.97			
Water in Feet	34.86	34.15			
Gallons to Purge	115.21	112.86			
Purging Started	1315	1540			
Purging Stopped	1500	1730			
Avg. Flow Rate	1.10 G.P.M.	1.03 G.P.M			
Total Amt. Purged	115.21	112.86			
Actual Purge Time	105 min	110 min			
Purging System Used	Well Wiz	Well Wiz			
Technician Initials	J.H & D.B.	J.H D.B			
Date Sampled	5/12/93	5/12/93			
New Depth to Water	10.10	8.15			
Sampling Started	1645	1615			
Sampling Stopped	1700	1630			
Sampling Method Used	Dis. Bailer	Dis Bailer			
Type Samples Taken	2/1/3	2/1/3	/ /	/ /	/ /
Time/Field Meas.	1645	1615			
pH (4)	7.20/7.17 7.15/7.13	7.66/7.65 7.62/7.60			
Conductivity (4)	1221/1222 1223/1223	1249/1248 1241/1245			
Temperature	65.4	66.1			
Turbidity	Clear Film on Bailer	Clear			
Ice Chest #(s)	C-79	C-79			
Custody Seal #(s)	5129379	5129379			
V/O Chest #(s)	C-79	C-79			
Custody Seal #	5129379	5129379			
Bus Bill Number	2000953767	2000953767			
Date/Time Shipped	1845 5/12	1845 5/12	/	/	/
Vented/Locked/Key#	one screw Not Locked	one screw Not Locked	/ /	/ /	/ /
Signature	J. Hall	J. Hall			

Page ___ of ___

155975

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/12/93

SITE: ST 16 BSS TYPE OF SAMPLE: WATER

WELL NO: MW2 LOCATION: across the street from station

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. W.C 6" below natural ground

DEPTH TO WATER FROM TOP OF CASING: 10.14 TIME: 1315

RATE OF RECHARGE:

DEPTH TO WATER AT TIME OF SAMPLING: 10.10 TIME: 1645

WATER TABLE: MEASURING DEVICE: Simple Pro - QED

PE: 7.20 7.17 TIME: 1645 TYPE: Hydac

PE: 7.15 7.13

CONDUCTIVITY, umhos/cm TIME: 1645 TYPE: Hydac

1221 1222 TEMPERATURE: 65.4

1223 1223 TURBIDITY: Clear - Filmon bailer

CHEST# C79 C/SEAL# 5129379 BUS BILL# 200095375 7

CHEST# C/SEAL# BUS BILL#

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

4" well casing is 6" below natural ground with attached concrete protective mound approximately 15" in diameter. Well casing top pulls off easy with attached lock and has gasoline odor

Weather - Cool & Breezy - 70° Sunny

SAMPLE COLLECTOR: J. Daul & D. Daniett

155077

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5.2.93

SITE: ST 16 BSS TYPE OF SAMPLE: Water

WELL NO: MW1 LOCATION: Across the STREET From STATION

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. Well casing 1" above ground Level

DEPTH TO WATER FROM TOP OF CASING: 7.97 TIME: 1540

RATE OF RECHARGE: .978

DEPTH TO WATER AT TIME OF SAMPLING: 8.15 TIME: 1615

WATER TABLE: _____ MEASURING DEVICE: Sample Pro. GW

PH: 7.66 7.65 TIME: 1615 TYPE: Hydac

PH: 7.62 7.60

CONDUCTIVITY, umhos/cm TIME: 1615 TYPE: Hydac

1249 1248 TEMPERATURE: 66.7

1247 1247 TURBIDITY: Clear

CHEST# C79 C/SEAL# 5129379 BUS BILL# 2000953757

CHEST# _____ C/SEAL# _____ BUS BILL# _____

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

Round (CONCRETE) Circular mound around 4" well casing was 2" above natural ground. 4" well casing was 1" above natural ground. Well casing top pulls off easy with attached lock and (has) Gasoline odor.

Weather - Cool & Breezy - 15° Sunny

SAMPLE COLLECTOR: J. Hauck & D. Barnett

155073

COMBUSTIBLE GAS/OXYGEN METER

CG/O2 METER DATA:

MODEL NO: MX251 SERIAL NO: LE91532

CALIBRATION: DATE: 5/11/93 TIME: 1315

GAS USED: READING:

READINGS:	LOCATION	%LEL	%O2	
Pre Purging	MW2	-000	1315	5/11/93
	MW1	-000	1525	"
Pre Sampling	MW1	005	1615	5/12/93
	MW2	004	1645	"

DETECTOR TUBES

TYPE OF TUBE: Gasoline DETECTION 5ppm

LIMITS: 30-1000ppm

TUBE NO.: 101L EXPIRATION Nov 93

DATE: 5/12/93

LOCATION		READING
MW1	Time 1615	0
MW2	Time 1645	0

WELL SAMPLING DAILY WORKSHEET

Project: CAFB	Site: ST BSS				
Monitor Well #	MW4	BSS-B	MW5	MW6	
Date Purged	5/12/93	5/12/93	5/12/93	5/12/93	
Casing Dia/Type	4"	2"	4"	4"	
Depth Reference Pt.	Ground Level	32" W.C 35" P.C. 342 cem slab	30" W.C 44" P.C. - slab	5" Below G.L.	
Total Depth	15.18	13.08	8.05	9.93	
Depth to Water	6.63	9.163	4.75	2.33	
Water in Feet	8.55	3.45	3.30	7.00	
Gallons to Purge	24.55	3gal	10.90	23.13	
Purging Started	1010/1100	945	1050/1140/1329	1340/1400	
Purging Stopped	1020/1110	950	1055/1145/1329	13 /141:	
Avg. Flow Rate	1.2g.p.m.	.4g.p.m.	.73g.p.m.	1.15g.p.m.	
Total Amt. Purged	24gal	2gal	11gal	23gal	
Actual Purge Time	20min	5min	15min	20min	
Purging System Used	H.Bail	H. Bail	H.Bail	H.Bail	
Technician Initials	D.G. J.H.	D.G. JH.	D.G. J.H.	D.G. J.H	
Date Sampled	5/13/92	5/13/93	5/13/93	5/13/93	
New Depth to Water	6.72	9.78	4.75	2.40	
Sampling Started	16.15	1630	1520	1500	
Sampling Stopped	1625	1640	1540	1515	
Sampling Method Used.	D. Bailer	D. Bailer	D. Bailer	D. Bailer	
Type Samples Taken	2/1/3	2/1/3	6/3/9	2/1/3	/ /
Time/Field Meas.	1615	1630	1520	1500	
pH (4)	7.42 7.38 7.35 7.32	6.85 6.86 6.86 6.86	7.07 7.05 7.04 7.02	7.60 7.55 7.51 7.49	
Conductivity (4)	1160 1161 1164 1167	1236 1237 1239 1240	1165 1170 1173 1176	1045 1047 1048 1049	
Temperature	7.68	7.42	76.5	75.1	
Turbidity	Yes/odor	Very Black	Yes/odor	Clear - Odor	
Ice Chest #(s)	C-80	C-80	C71	C80	
Custody Seal #(s)	51393C80	51393C80	51393C71	5193C80	
V/O Chest #(s)	C80	C80	C88	C80	
Custody Seal #	51393C80	51393C80	51393C88	5193C80	
Bus Bill Number	2000953592	2000953592	2000953592	2000953592	
Date/Time Shipped	5/13/93/1800	5/13/93/1800	5/13/93/1800	5/13/93/1800	/
Vented/Locked/Key#	Yes/No/na	/Yes/	/Yes/	Yes/No/na	/ /
Signature	J. Haul	J. Haul	J. Haul	J. Haul	

155030

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/13/93

SITE: ST 16 BSS TYPE OF SAMPLE: WATER

WELL NO: MW4 LOCATION: North of Station

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. Ground level

DEPTH TO WATER FROM TOP OF CASING: 6.63 TIME: 1010

RATE OF RECHARGE: .98

DEPTH TO WATER AT TIME OF SAMPLING: 6.72 TIME: 1615

WATER TABLE: _____ MEASURING DEVICE: Sample Probed

PH: 7.42 7.38 TIME: 1615 TYPE: Hydac.

PH: 7.35 7.32

CONDUCTIVITY, umhos/cm TIME: 1615 TYPE: Hydac.

1160 1161 TEMPERATURE: 7.68

1164 1167 TURBIDITY: Amber Color

CHEST# C.EC. C/SEAL# S1393080 BUS BILL# 200 0953592

CHEST# C. 80 C/SEAL# S1393080 BUS BILL# 200 0953592

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

This well is only 2' from the excavation of the leaking tanks, ground water may have been disturbed slightly. Well is normal in recharge time

Sunny - Hot 80° - No gasoline on paste

SAMPLE COLLECTOR: J. Hall & D. Garnett

155031

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/13/93

SITE: ST 16 BSS TYPE OF SAMPLE: Water

WELL NO: BSS-B LOCATION: North of Station

CSG DIAM 2" CSG TYPE: PVC

RISER ELEV. 32" W.C - 35 P.C 3½ Sq. Con Slab

DEPTH TO WATER FROM TOP OF CASING: 9.63 TIME: 945

RATE OF RECHARGE: .984

DEPTH TO WATER AT TIME OF SAMPLING: 9.78 TIME: 1630

WATER TABLE: _____ MEASURING DEVICE: Sample Pro GED

PH: 6.85 6.86 TIME: 1630 TYPE: Hydac

PH: 6.86 6.86

CONDUCTIVITY, umhos/cm TIME: 1630 TYPE: Hydac

1236 1237 TEMPERATURE: 7.42

1239 1240 TURBIDITY: Black Water

CHEST# C 80 C/SEAL# 51393C80 BUS BILL# 2000953592

CHEST# C80 C/SEAL# 51393C80 BUS BILL# 2000953592

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

This well was a slow charger and had very dirty water, black in color, strong petro odor. This condition existed at purging and sampling, water never cleared - about 8' from excavation site

No casing on pole - Hot Sunny 80°

SAMPLE COLLECTOR: J. Hauld D. Garnett

155032

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/13/93

SITE: ST 16 BSS TYPE OF SAMPLE: Water

WELL NO: MW5 LOCATION: Drainage Ditch NE of Station

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. 30" W.C - 44" P.C - 3 1/2" - Round Conc. Slab

DEPTH TO WATER FROM TOP OF CASING: 4.75 TIME: 1050

RATE OF RECHARGE: 100%

DEPTH TO WATER AT TIME OF SAMPLING: 4.75 TIME: 1520

WATER TABLE: _____ MEASURING DEVICE: Sample Pro GED

PH: 7.07 7.05 TIME: 1520 TYPE: Hydac

PH: 7.04 7.02

CONDUCTIVITY, umhos/cm TIME: 1520 TYPE: Hydac

1165 1170 TEMPERATURE: 76.3

1173 1176 TURBIDITY: Yes - Smell

CHEST# C-71 C/SEAL# 5B393C71 BUS BILL# 200095359 2

(VO) CHEST# C88 C/SEAL# 51393C88 BUS BILL# 200095359 2

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

WATER FROM WELL HAD STRONG ODOR. THE FIRST BAILER OF WATER WAS CLEAR AND USED FOR BTEX/TPH SAMPLES, HOWEVER THE WATER TURNED BLACKISH AND MURKY FOR FOLLOWING SAMPLES. THIS WELL WAS DOWN GRADIENT FROM EXCAVATION AND APPROX 12' DUE EAST OF UST'S

Sunny Hot 80° - No gasoline on Paste

SAMPLE COLLECTOR: J. Hall C. D. Barnett

155833

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/13/93

SITE: St 16 BSS TYPE OF SAMPLE: Water

WELL NO: MW6 LOCATION: IN Street N. of Station

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. W.C. 5" Below Natural Ground

DEPTH TO WATER FROM TOP OF CASING: 2.33 TIME: 1340

RATE OF RECHARGE: .9-70

DEPTH TO WATER AT TIME OF SAMPLING: 2.40 TIME: 1500

WATER TABLE: _____ MEASURING DEVICE: Sample Pro GED

PH: 7.60 7.55 TIME: 1500 TYPE: Hydac

PH: 7.51 7.49

CONDUCTIVITY, umhos/cm TIME: 1500 TYPE: Hydac

1045 1047 TEMPERATURE: 75.1

1048 1049 TURBIDITY: Clear - Smell

CHEST# C.80 C/SEAL# S1393C80 BUS BILL# 2000953592

CHEST# C.80 C/SEAL# S1393C80 BUS BILL# 2000953592.

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

WELL IS IN LOW AREA OF PAVEMENT BETWEEN GAS STATION AND STREET, PROTECTIVE CASING WAS FLOODED WITH SURFACE WATER FROM RECENT RAINS. THE POSSIBILITY OF SOME OF THIS WATER ENTERING THE WELL EXISTS. THE SEAL ON WELL top is not very good

Hot - Sunny 80° - Naggasoline on paste

SAMPLE COLLECTOR: M. Burritt J. Hart

15[illegible]

COMBUSTIBLE GAS/OXYGEN METER

CG/O2 METER DATA:

MODEL NO: MX251 SERIAL NO: LBE1532

CALIBRATION: DATE: 5/12/93 TIME: 0930

GAS USED: READING:

READINGS:	LOCATION	%LEL	%O2	
Pre Purging	BSS-B	0930	000	5/12/93
	MW-4	1005	000	"
	MW 5	1025	000	"
	MW 6	1330	001	"
Pre Sampling	MW-6	1500	00	5/13/93
	MW 5	1520	00	"
	MW 4	1610	00	"
	BSS B	1615	00	"

DETECTOR TUBES

TYPE OF TUBE: Gasoline DETECTION 5ppm

LIMITS: 30-1000 ppm

TUBE NO.: 101L EXPIRATION Nov 93

DATE: 5/13/93

LOCATION		READING
MW 6	1500	00
MW 5	1520	00
MW 4	1610	0
BSS-B	1615	00

155035

WELL SAMPLING DAILY WORKSHEET

Project: CAFB	Site: ST16 BSS				
Monitor Well #	BSS-A	MW3			
Date Purged	5/13/93	5/13/93			
Casing Dia/Type	2"	4"			
Depth Reference Pt.	5" Below N.G.	5" above N.G.			
Total Depth	10.60	19.03			
Depth to Water	5.15	10.83			
Water in Feet	5.45	8.2			
Gallons to Purge	4.74	27.10			
Purging Started	0925	1130/1235/1315			
Purging Stopped	0935	1135/1240/1325			
Avg. Flow Rate	.9 gp.m.	1.4 gpm			
Total Amt. Purged	9gal	32gal.			
Actual Purge Time	10min	20 min.			
Purging System Used	Hand Bail	Hand Bail			
Technician Initials	J.H. D.G	J.H. DG.			
Date Sampled	5/13/93	5/13/93			
New Depth to Water	5.15	10.83			
Sampling Started	1015	1430			
Sampling Stopped	1030	1440			
Sampling Method Used	Disp. Bailer	Disp. Bailer			
Type Samples Taken	2/1/3	2/1/3	/ /	/ /	/ /
Time/Field Meas.	1015	1430			
pH (4)	953 956 958 959	811 811 812 813			
Conductivity (4)	7.66 7.61 7.57 7.54	7.74 7.71 7.66 7.64			
Temperature	73.5	74.4			
Turbidity	Very Black	Brown			
Ice Chest #(s)	C88	C88			
Custody Seal #(s)	51393C88	51393C88			
V/O Chest #(s)	C88	C88			
Custody Seal #	51393C88	51393C88			
Bus Bill Number	5000953592	5000953592			
Date/Time Shipped	5/13/92/1745	5/13/93/1745	/	/	/
Vented/Locked/Key#	1 screw on lid/NO	2 screws on lid/NO	/ /	/ /	/ /
Signature	J.H. D.G	J.H. DG			

Page ___ of ___

155633

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 3/13/93

SITE: ST - Base Service Station TYPE OF SAMPLE: GROUNDWATER

WELL NO: BSS-A LOCATION: South of Service Station

CSG DIAM 2" CSG TYPE: PVC

RISER ELEV. 5" Below Natural Ground

DEPTH TO WATER FROM TOP OF CASING: 5.15 TIME: 0925

RATE OF RECHARGE: 100%

DEPTH TO WATER AT TIME OF SAMPLING: 5.15 TIME: 1030

WATER TABLE: _____ MEASURING DEVICE: Sample for GCD

PH: 953 956 TIME: 1030 TYPE: Hydac

PH: 958 959

CONDUCTIVITY, umhos/cm TIME: 1030 TYPE: Hydac

7.66 7.61 TEMPERATURE: 73.5

7.57 7.54 TURBIDITY: Very Black

CHEST# C88 C/SEAL# 5/393077 BUS BILL# 2000953592

CHEST# C88 C/SEAL# 5/393088 BUS BILL# 2000953592

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

Surface Water was covering entire protective housing unit, with black water. Well casing cap seem to seal well and keep surface water out of well. No gasoline odor but another odor existed. Water in well was badly discolored with possible other contaminants from service station. Well is adjacent to used oil storage facility.

One Screw in Surface Cover.

Temp. Sunny 80° -

No Gasoline on Pasic -

SAMPLE COLLECTOR: J. Paula DeBaun

155037

WATER SAMPLES FIELD DATA FORM

PROJECT: CAFB DATE: 5/13/93

SITE: ST 16 BSS TYPE OF SAMPLE: WATER

WELL NO: MW3 LOCATION:

CSG DIAM 4" CSG TYPE: PVC

RISER ELEV. 5" above Natural Ground - 3' Round Concrete Mound mark on South Side

DEPTH TO WATER FROM TOP OF CASING: 10.83 TIME: 1130

RATE OF RECHARGE: 100%

DEPTH TO WATER AT TIME OF SAMPLING: 10.83 TIME: 1430

WATER TABLE: MEASURING DEVICE: Sample Probed

PH: 7.74 7.71 TIME: 1430 TYPE: Hydac

PH: 7.66 7.64

CONDUCTIVITY, umhos/cm TIME: 1430 TYPE: Hydac

811 811 TEMPERATURE: 74.4

812 813 TURBIDITY: Brown Water

CHEST# C88 C/SEAL# 513913088 BUS BILL# 000953592

CHEST# C88 C/SEAL# 51393088 BUS BILL# 000953592

NOTES CONCERNING CONDITION OF WELL, ODOR, COLOR, AND PROBLEMS

This is up-gradient well from base service station. No gasoline odor from well existed. However water was very murky with dissolved soil or clay. Well did not appear to have been developed properly. Water never cleared even with extra purging. No gasoline on paste Hot - Sunny - EC

SAMPLE COLLECTOR: J. Hall + D. Jarrett

155033

COMBUSTIBLE GAS/OXYGEN METER

CG/O2 METER DATA:

MODEL NO: MX251 SERIAL NO: LR91532

CALIBRATION: DATE: 5/13/93 TIME: 0900

GAS USED: READING:

READINGS:		LOCATION	%LEL	%O2
0900	5/13/93	BSS-17	21 on top well head 4 6" above	
1100	"	MW-3	00	
1030	"	BSS-A	000	
1430	"	MW-3	000	

DETECTOR TUBES

TYPE OF TUBE: Gasoline DETECTION 5ppm

LIMITS: 30-1000

TUBE NO.: 101L EXPIRATION Nov 93

DATE: 5/12/93

LOCATION		READING
BSS-A	Time 1030	00
MW3	" 1430	00

155839

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location CAFB Discharge Pit of Culvert Date 3/14/93

Site ST16 BSS Discharge Area Sample No. SW2

Weather Conditions Hot, Sunny · 80°

Stream Conditions Calm - not flowing

Depth of stream 18"

Sampling Depth Surface Sample Start/End Times 1325 / 1340

Sample Containers Collected:		QA/QC Samples Collected:	
BTEX/MTBE	✓	BTEX/MTBE	—
TRPH	✓	TRPH	—

Rinsate Sample to be analyzed for N/A

Cooler No. C13 (Vials C-81)

Remarks/Comments

Appeared to have gasoline dissolved and/or floating on top of water. Water was bubbly, no odor noticeable.

Hot 85°

Sampler's Signature J. Hall & D. Garnett

15[illegible]

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location CAFB Discharge of Upstream Date 5/14/93

Site ST16 BSS Discharge Area Sample No. SW-3

Weather Conditions ~~Hot~~ - Sunny - 80°

Stream Conditions Clear and gently flowing, with algae growing.

Depth of stream 3'

Sampling Depth Surface Start/End Times 1345 / 1355

Sample Containers Collected:		QA/QC Samples Collected:	
BTEX/MTBE	✓	BTEX/MTBE	NA
TRPH	✓	TRPH	

Rinsate Sample to be analyzed for N/A

Cooler No. C-81

Remarks/Comments

No odor - Some slim on top of water. Pool of water had algae and other plants in water.

~~Hot~~ 85°

Sampler's Signature J. Davis & D. Garrett

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location CAFB (confluence of SW2 & SW3 Date 5/14/93

Site ST16 BSS Discharge Area Sample No. SW-4

Weather Conditions Hot - Sunny - 80°

Stream Conditions clear & Flowing.

Depth of stream 1"

Sampling Depth Surface Start/End Times 1400/1410

Sample Containers Collected:		QA/QC Samples Collected:	
BTEX/MTBE	✓	BTEX/MTBE	N/A
TRPH	✓	TRPH	

Rinsate Sample to be analyzed for N/A

Cooler No. C-81

Remarks/Comments

Sample taken from South East corner of drain pipes. Water appeared to be clear coming thru drainage pipes, only about an inch of water was flowing. No odor Hot - 85°

Sampler's Signature J. Hall & D. Garrett

155033

SURFACE WATER SAMPLING

FIELD DATA SHEET

Location CAF3 - Pre oil/water separator Date 5/14/93

Site ST16 BSS Discharge Area Sample No. SW5

Weather Conditions ~~Hot~~ - Sunny 80°

Stream Conditions Clear & Gently flowing.

Depth of stream 16"

Sampling Depth Surface Start/End Times 1415/1425

Sample Containers Collected:

BTEX/MTBE ✓
TRPH —

QA/QC Samples Collected:

BTEX/MTBE N/A
TRPH

Rinsate Sample to be analyzed for N/A

Cooler No. C-81

Remarks/Comments

Sample was taken upstream of pre oil/water separator. No odor - Flowing

~~Hot~~ 85°

Sampler's Signature J. Hall & D. Barnett

APPENDIX C

BORING LOGS, WELL CONSTRUCTION DETAILS AND STATE OF TEXAS WELL REPORTS

- D R A F T -

DRILLING LOG	RADIAN CORPORATION	INSTALLATION: CARSWELL AFB, TX	SHEET 1 OF 1 SHEETS
1. PROJECT: CARSWELL AFB, IRP PHASE II STAGE 2		7. TOTAL DEPTH OF HOLE: 11 ft BGL	
2. LOCATION: Site BSS		8. DATUM FOR ELEVATION SHOWN: sea level	
3. DRILLING AGENCY: Atec Associates		9. MANUFACTURER'S DESIGNATION OF DRILL: Mobile Drill B-61	
4. HOLE NO.: BSSA		10. NO. OF SAMPLES TAKEN: 3	
5. NAME OF GEOLOGIST: Guy J. Childs		11. ELEVATION GROUND WATER: 562.30 ft MSL (3/4/88)	
6. COORDINATES OF HOLE: X: 2024357.78 Y: 402068.84		12. DATE HOLE ESTABLISHED: 2/15/88	
		13. ELEVATION TOP OF HOLE: 566.90 ft MSL	

Depth (Ft.)	Graphic Log	Sample ID	Soil Class/Code	Visual Description
0			F/ASPH	FILL: ASPHALT, COBBLES, GRAVEL.
1		BSSA-1	S/CLAY	CLAY: MEDIUM-DARK BROWN TO DARK GRAY.
4		BSSA-2	S/CLLR	SILTY CLAY: LIGHT GRAY/BROWN, OCCASIONAL PEBBLES.
7		BSSA-3	S/SDLR	SAND: YELLOW/BROWN, FINE TO MEDIUM GRAINED, OCCASIONAL LIMESTONE FRAGMENTS. WATER AT 7 FEET.
11			R/LMSN	LIMESTONE: REFUSAL AT 11 FEET, PROBABLY LIMESTONE. END OF BORING AT 11 FEET.

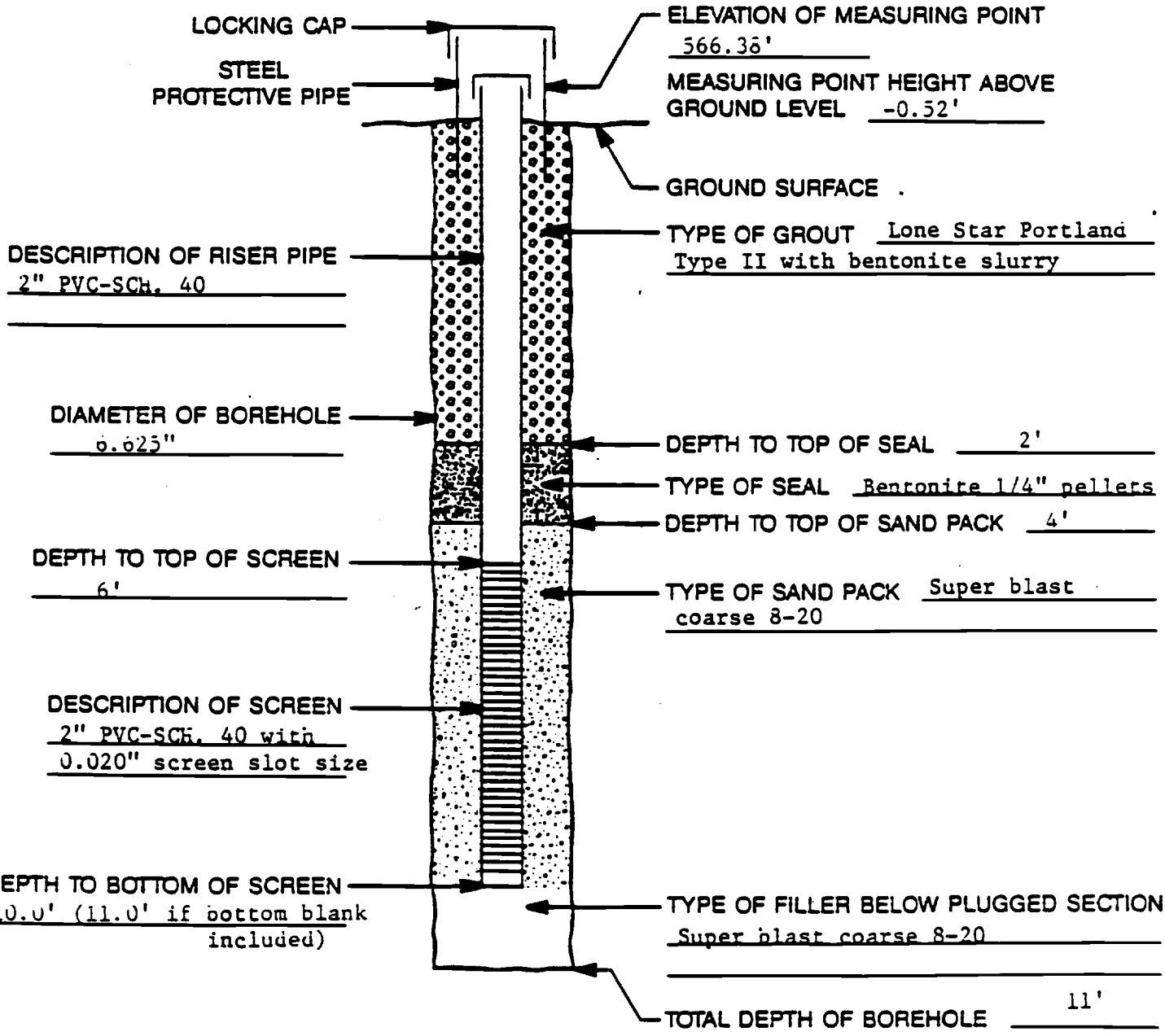
WELL CONSTRUCTION SCHEMATIC

155085

- D R A F T -

PROJECT Carswell AFB IRP Phase II Stage 2
SITE Base Service Station (BSS)
COORDINATES 402,068.84192 2,024,357.78905
DATE COMPLETED 2/15/88
SUPERVISED BY Guy J. Childs
DRILLER ATEC Associates, Inc.
DRILLING METHOD Hollow-Stem Auger

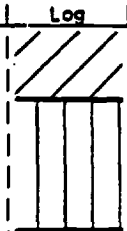
WELL NO. BSS-A
AQUIFER Upper Zone
DEPTH TO WATER 7.0'



D87 · 1240A

- D R A F T -

DRILLING LOG	RADIAN CORPORATION	INSTALLATION: CARSWELL AFB, TX	SHEET 1 OF 1 SHEETS
1. PROJECT: CARSWELL AFB, IRP PHASE II STAGE 2		7. TOTAL DEPTH OF HOLE: 10 ft BGL	
2. LOCATION: Site BSS		8. DATUM FOR ELEVATION SHOWN: sea level	
3. DRILLING AGENCY: Atec Associates		9. MANUFACTURER'S DESIGNATION OF DRILL: Mobile Drill B-61	
4. HOLE NO.: BSSB		10. NO. OF SAMPLES TAKEN: 3	
5. NAME OF GEOLOGIST: Guy J. Childs		11. ELEVATION GROUND WATER: 559.28 ft MSL (3/4/88)	
6. COORDINATES OF HOLE: X: 2024331.93 Y: 402390.17		12. DATE HOLE ESTABLISHED: 2/15/88	
		13. ELEVATION TOP OF HOLE: 567.10 ft MSL	

Depth (Ft.)	Graphic Log	Sample ID	Soil Class/Code	Visual Description
0		BSSB-1	S/CLLR	CLAY: MEDIUM TO DARK BROWN, SILTY, SOME GRAVEL.
2		BSSB-2	S/SILT	SILT: BROWN TO GRAY.
3			S/SDFN	SAND: OLIVE GRAY, FINE GRAINED, MINOR SILT; HYDROCARBON ODOR (BENZENE DRAEGER REACTION).
5		BSSB-3	S/SDFN	SAND: DARK OLIVE GRAY, FINE GRAINED; BECOMING MOIST WITH DEPTH.
8			S/SAND	SAND: LIGHT BROWN, FINE TO MEDIUM GRAINED; HYDROCARBON ODOR (BENZENE DRAEGER REACTION). WATER AT 8 FEET.
10			R/LMSN	LIMESTONE: LIGHT GRAY, INDURATED. HYDROCARBON ODOR FROM GROUNDWATER. REFUSAL AND END OF BORING AT 10 FEET.

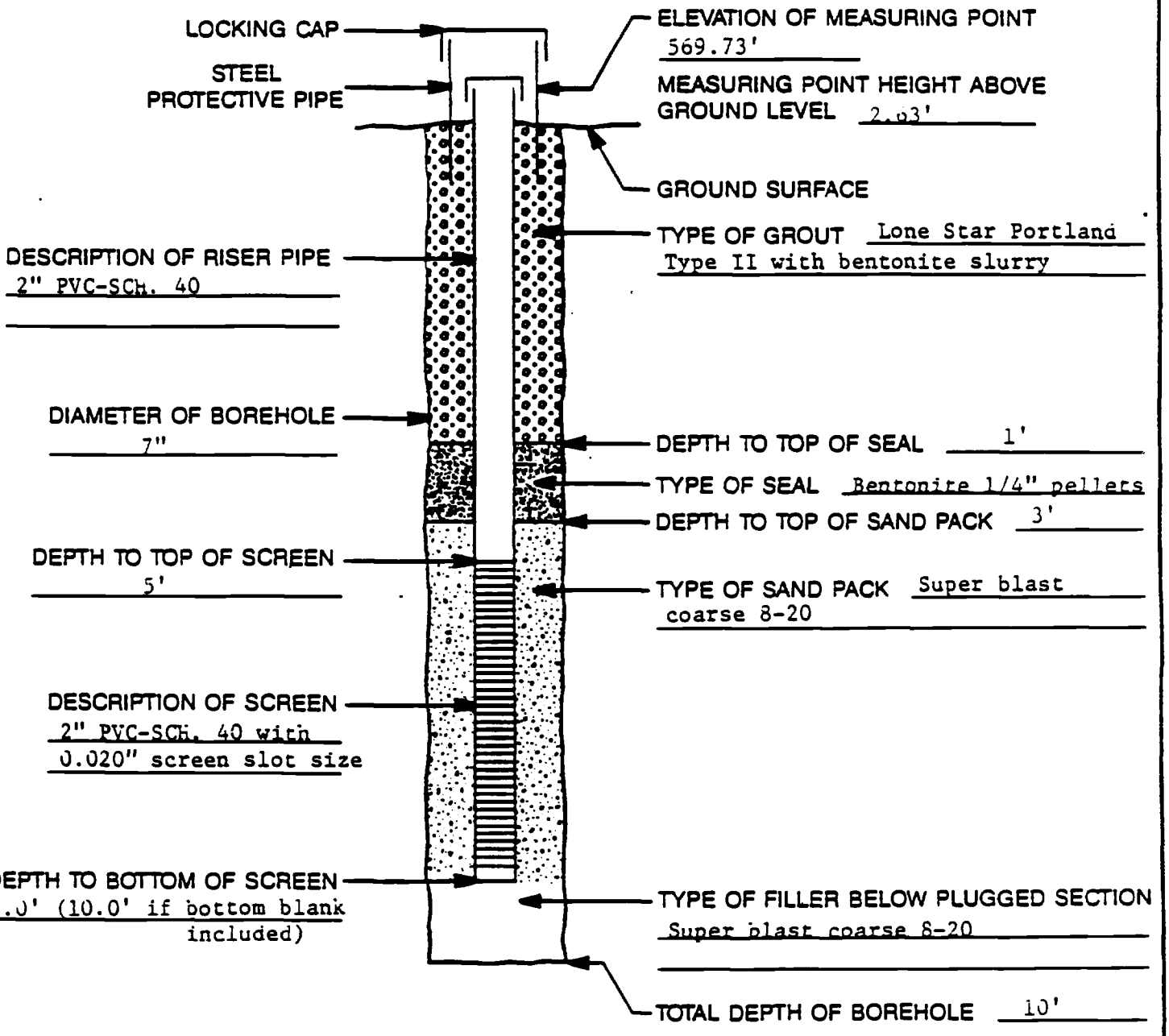
WELL CONSTRUCTION SCHEMATIC

151097

- D R A F T -

PROJECT Carswell AFB IRP Phase II Stage 2
SITE Base Service Station (BSS)
COORDINATES 402,390.17981 2,024,331.93158
DATE COMPLETED 2/15/88
SUPERVISED BY Guy J. Childs
DRILLER ATEC Associates, Inc.
DRILLING METHOD Hollow-Stem Auger

WELL NO. BSS-8
AQUIFER Upper Zone
DEPTH TO WATER 8.0'



D87 · 1240A

- D R A F T -

DRILLING LOG	RADIAN CORPORATION	INSTALLATION: CARSWELL AFB, TX	SHEET 1 OF 1 SHEETS
1. PROJECT: CARSWELL AFB, IRP PHASE II STAGE 2		7. TOTAL DEPTH OF HOLE: 12 ft BGL	
2. LOCATION: Site BSS		8. DATUM FOR ELEVATION SHOWN: sea level	
3. DRILLING AGENCY: Atec Associates		9. MANUFACTURER'S DESIGNATION OF DRILL: Mobile Drill B-61	
4. HOLE NO.: BSSC		10. NO. OF SAMPLES TAKEN: 4	
5. NAME OF GEOLOGIST: Guy J. Childs		11. ELEVATION GROUND WATER: 548.72 ft MSL (3/4/88)	
6. COORDINATES OF HOLE: X: 2024565.7 Y: 402254.07		12. DATE HOLE ESTABLISHED: 2/14/88	
		13. ELEVATION TOP OF HOLE: 560.00 ft MSL	

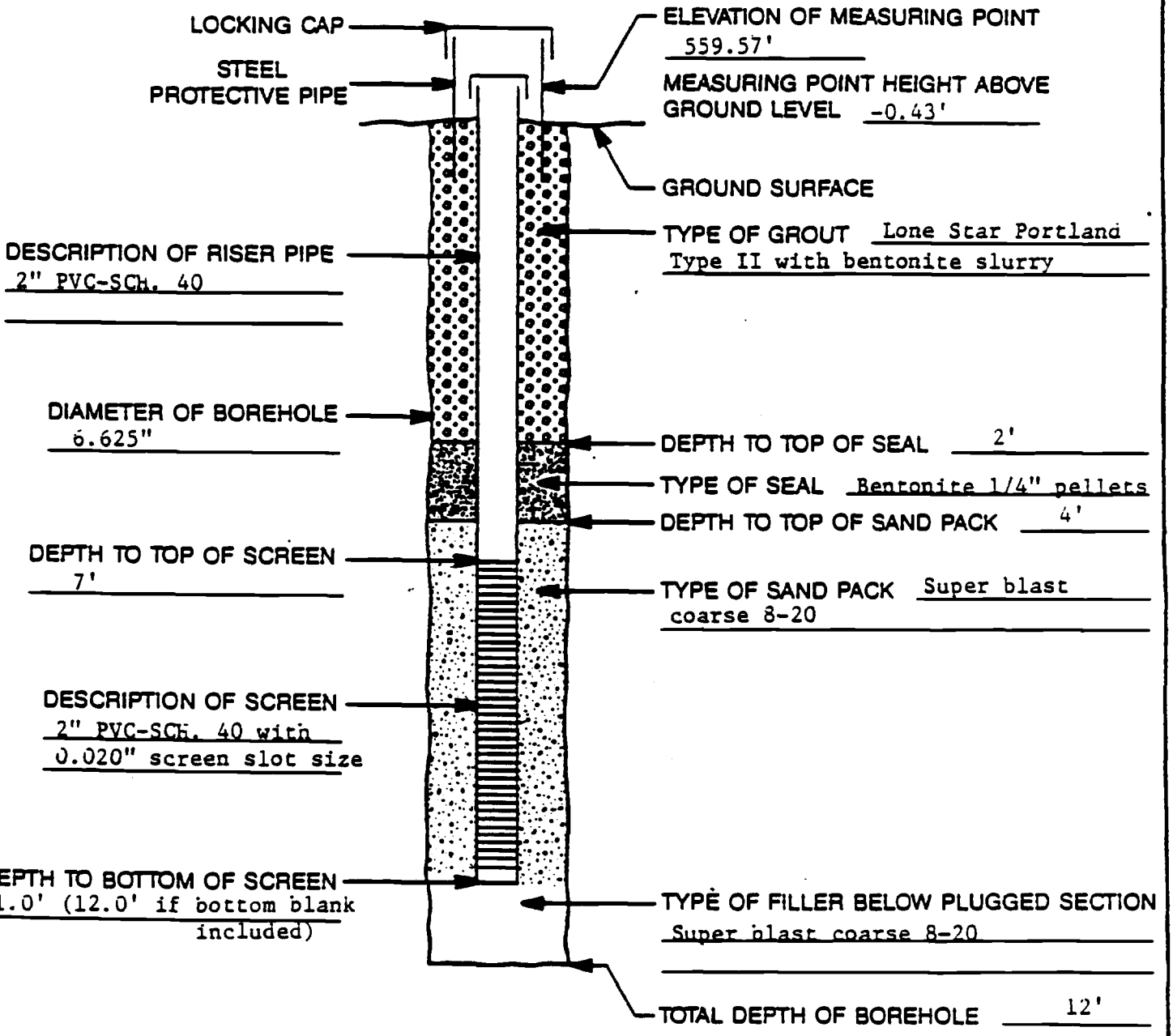
Depth (Ft.)	Graphic Log	Sample ID	Soil Class/Code	Visual Description
0		BSSC-1	S/CLLR	SILTY CLAY: DARK GRAY, SOME FINE GRAINED SAND, MINOR PEBBLES.
2		BSSC-2	S/CLLR	SAME AS ABOVE
4		BSSC-3	S/SLSM	CLAYEY SILT: LIGHT BROWN/GRAY, FINE GRAINED SAND, FEW LIMESTONE FRAGMENTS.
9		BSSC-4	S/CLLR	GRAVELLY CLAY: ABUNDANT LIMESTONE FRAGMENTS, WET.
10			S/GRCL	GRAVEL AND CLAY: INCREASING GRAVEL. WATER AT 10 FEET.
12			R/LMSN	LIMESTONE: LIGHT GRAY, INDURATED. REFUSAL AND END OF BORING AT 12 FEET.

WELL CONSTRUCTION SCHEMATIC

- D R A F T -

PROJECT Carswell AFB IRP Phase II Stage 2
SITE Base Service Station (BSS)
COORDINATES 402,254.07567 2,024,365.70484
DATE COMPLETED 2/15/88
SUPERVISED BY Guy J. Childs
DRILLER ATEC Associates, Inc.
DRILLING METHOD Hollow-Stem Auger

WELL NO. BSS-C
AQUIFER Upper Zone
DEPTH TO WATER 10.0'



D87-1240A

- D R A F T -

DRILLING LOG	RADIAN CORPORATION	INSTALLATION: CARSWELL AFB, TX	SHEET 1 OF 1 SHEETS
1. PROJECT: CARSWELL AFB, IRP PHASE II STAGE 2		7. TOTAL DEPTH OF HOLE: 6 ft BGL	
2. LOCATION: Site BSS		8. DATUM FOR ELEVATION SHOWN: sea level	
3. DRILLING AGENCY: Atec Associates		9. MANUFACTURER'S DESIGNATION OF DRILL: Mobile Drill B-61	
4. HOLE NO.: BSSD		10. NO. OF SAMPLES TAKEN: 3	
5. NAME OF GEOLOGIST: Guy J. Childs		11. ELEVATION GROUND WATER:	
6. COORDINATES OF HOLE: X: 2024487.37 Y: 402418.08		12. DATE HOLE ESTABLISHED: 2/14/88	
		13. ELEVATION TOP OF HOLE: 561.45 ft MSL	

Depth (Ft.)	Graphic Log	Sample ID	Soil Class/Code	Visual Description
0		BSSD-1	S/CLLR	SILTY CLAY: DARK GRAY, OCCASIONAL PEBBLES, SOME SAND.
2		BSSD-2	S/CLLR	SAME AS ABOVE
4		BSSD-3	S/SLLR	SILT: DARK GRAY, MINOR CLAY, SOME LIMESTONE.
6			R/LMSN	LIMESTONE: LIGHT GRAY. REFUSAL AND END OF BORING AT 6 FEET.

Log of Boring

Number B-1 | Location SEE SITE PLAN | 2492001270

Project: CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS

Auger Type	Casing Elevation
Hollow Stem/Split Spoon	
Drilled By	**Logged By**
J. Logan	K. Ward

Depth (Feet)	Samples	Symbol	STRATUM DESCRIPTION	Well Construction Details	Photo-ionization Reading	Benzene (ppm)	Toluene (ppm)	Xylene (ppm)	Ethyl Benzene (ppm)	Total BTXE (ppm)	T.P.H. (ppm)
			Brown SILTY CLAY, Tan Loam and sparse LIMESTONE fragments								
2.0			SILTY CLAY with sparse GRAVEL, organic material throughout								
4.0			SILTY, dark brown CLAY								
5											
6.0			SILTY, dark brown CLAY								
8.0			Brown CLAY MARL with some organic material throughout		0.2						20.6
10											
10.0			Brown CLAY MARL								
12.0			Brown CLAY MARL, some moisture at 13 feet								
13.0			Brown and tan CLAY								
15											
15.0			Brown CLAY MARL with slight hydrocarbon odor		3.5						10.8
16.0			Light brown CLAY, very moist and very strong hydrocarbon odor								
18.0			Light brown CLAY, very moist and very strong hydrocarbon odor		8.7						14.3
20											
20.0			Light brown SILTY CLAY, quite moist, with slight hydrocarbon odor								
25											
25.0			Light brownish tan SILTY		0.2						<10.0

Completion Depth	Date	Water Observations
48.5'	8/10/92	WATER ENCOUNTERED AT 13 FEET

Maxim Engineers Inc.

Log of Boring B-1 SEE SITE PLAN 2492001270

Project CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS

Auger Type	Casing Elevation
Hollow Stem/Split Spoon	
Drilled By	**Logged By**
J. Logan	K. Ward

Depth (Feet)	Samples	Symbol	STRATUM DESCRIPTION	Well Construction Details	Photo-ionization Reading	Benzene (ppm)	Toluene (ppm)	Xylene (ppm)	Ethyl Benzene (ppm)	Total BTXE (ppm)	T.P.H. (ppm)
			CLAY with very faint hydrocarbon odor								
			27.0 Light brown SILTY CLAY, very moist, no hydrocarbon odor								
30			30.0 Light grayish tan SAND with significant moisture								
			32.5 Light grayish tan, wet SAND								
35			35.0 Light grayish tan, wet SAND with very faint hydrocarbon odor		6.0						15.0
			37.5 NO SAMPLE RECOVERY								
40			40.0 Light grayish brown, wet SAND with streaks of gray weathered LIMESTONE								
			42.5 Light grayish brown SAND with occasional LIMESTONE fragments								
45			45.0 Medium gray SAND and SANDY CLAY with few LIMESTONE fragments		2.8						13.4
			48.5 Gray and tan LIMESTONE fragments, river GRAVEL, and some SANDY CLAY		1.7						16.6
			BORING TERMINATED AT 48.5 FEET, CONVERTED TO MW-I								

Completion Depth	Date	Water Observations
48.5'	8/10/92	WATER ENCOUNTERED AT 13 FEET

Maxim Engineers, Inc.

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER OPERATION CONTRACTOR (Name) ADDRESS BLD 1330 CARSWELL AFB (Street or RFD) FTWORTH (City) 76127 (State) (Zip)

2) LOCATION OF WELL: County TARRANT. APPROX 5 miles in W TO NW (NE, SW, etc.) direction from FT WORTH (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP MAPS CO PAGE 60 Q TARRANT

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AUGER

6) WELL LOG:
Date Drilling: Started 8-7 1992 Completed 8-7 1992

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
12	Surface	48½

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other SAND
If Gravel Packed give interval ... from 6 ft. to 48½ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	BROWN SILTY CLAY
2	4	GREY SILTY CLAY
4	48.6	SILTY SANDY CLAY
48.6		BEDROCK

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	SOLID	0	8.6	40
4	N	SCREENS	8.6	48.6	40

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4 ft. No. of Sacks Used 4
BENONITE 4 ft. to 6 ft. No. of Sacks Used 10 GAL
Method used BY HAND
Cemented by DRILLER

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71] FLUSH MOUNT

11) WATER LEVEL:
Static level 10' ft. below land surface Date 8-7-9
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth
NA

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other X
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: NA
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ODOR Depth of strata 20
Was a chemical analysis made? ☐ Yes ☐ No NA

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME MAXIM ENGINEERS (Type or print) WELL DRILLER'S LICENSE NO. 2945 M

ADDRESS 2342 FARENS (Street or RFD) DALLAS (City) TX (State) 75229 (Zip)

(Signed) James R Logan (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

Log of Boring | B-2 | SEE SITE PLAN | 2492001270

Project: CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS

Auger Type	Casing Elevation
Hollow Stem	
Drilled By	**Logged By**
J. Logan	K. Ward

Depth Feet	Samples	Symbol	STRATUM DESCRIPTION	Well Construction Details	Photo-Ionization Reading	Benzene (ppm)	Toluene (ppm)	Xylene (ppm)	Ethyl Benzene (ppm)	Total BTXE (ppm)	T.P.H. (ppm)
			Brown, dry, SILTY TOPSOIL								
			2.0 Brown to dark brown SILTY SOIL								
5			4.0 Dark brown SILTY LOAM								
			6.0 Dark brown SILTY CLAY MARL								
			8.0 Medium brown CLAY LOAM								
10			10.0 Brown CLAY with gray mottles and LIMESTONE fragments								
			12.0 Brown CLAY LOAM with some calcareous material								
			14.0 Light brown CLAY LOAM with gray weathered LIMESTONE throughout		0.5						10.0
15			16.0 Quite moist								
			Tan SILT - very moist with some weathered LIMESTONE fragments								
			18.0 Tan SILT with definite hydrocarbon odor		3.5						14.3
20			20.0 Tan SILT with slightly less odor								
			22.5 Tan SAND grading to tan SILTY CLAY		0.5						<10
25			25.0								

Completion Depth	Date	Water Observations
49.0'	8/10/92	WATER ENCOUNTERED AT 16 FEET

Maxim Engineers, Inc.

B-2 SEE SITE PLAN 2492001270

Project

CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS

Auger Type	Casing Elevation
Hollow Stem	
Drilled By	**Logged By**
J. Logan	K. Ward

Depth Feet	Samples	Symbol	STRATUM DESCRIPTION	Well Construction Details	Photo-Ionization Reading	Benzene (ppm)	Toluene (ppm)	Xylene (ppm)	Ethyl Benzene (ppm)	Total BTXE (ppm)	T.P.H. (ppm)
			Tan SILTY CLAY and CLAY-SAND with grayish mottles throughout								
			27.5 Tan SAND and CLAY-SAND with pockets of grayish LIMESTONE								
30			30.0 Tan, SILTY, wet CLAY with occasional gray mottles								
35			35.0 Dark grayish brown, wet SAND and SANDY CLAY with grayish brown mottles								
40			40.0 Medium gray SAND grading to gray SANDY CLAY Significant moisture								
45			45.0 Medium gray SANDY CLAY with abundant large wood chips throughout		0.4						<10
			48.0 Dark gray watery SILT with LIMESTONE and abundant GRAVEL throughout		0.3						<10
			49.0 BEDROCK at 49 feet BORING TERMINATED AT 49 FT, CONVERTED TO MW-2								

Completion Depth	Date	Water Observations
49.0'	8/10/92	WATER ENCOUNTERED AT 16 FEET

Maxim Engineers, Inc.

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER OPERATION CONTRACTOR (Name) ADDRESS BLDG 330 CARSWELL AFB FTWORTH 7612 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County TARRANT. APPROX 5 miles in W TO N W (NE, SW, etc.) direction from FT WORTH (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP MAPSCO PAGE 60 Q TARRANT

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Drive ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AUGER

6) WELL LOG:
Date Drilling: Started 8-10 1992 Completed 8-10 1992

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
12	Surface	49

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other SAND
If Gravel Packed give interval . . . from 7 ft. to 49 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	4	BROWN SILTY CLAY
4	22	CLAY SILTY
22	49	SILTY SANDY CLAY

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	SOLID	0	9	40
4	N	SCREENS	4	49	40

(Use reverse side if necessary)

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 5 ft. to 0 ft. No. of Sacks Used 4
BENONITE 5 ft. to 7 ft. No. of Sacks Used 10 GAL
Method used BY HAND
Cemented by DRILLER

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other NA
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: NA
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71] FLUSH MOUNT

11) WATER LEVEL:
Static level NA ft. below land surface Date NA
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ODOR Depth of strata 28
Was a chemical analysis made? ☐ Yes ☐ No NA

12) PACKERS:

Type	Depth
NA	

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understar that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME MAXIM ENGINEERS (Type or print) WELL DRILLER'S LICENSE NO. 2945 M

ADDRESS 2342 FABENS (Street or RFD) DALLAS (City) TX (State) 75229 (Zip)

(Signed) James R Logan (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map ____

Log of Boring B-3 SEE SITE PLAN 2492001270

Project

CARSWELL AIR FORCE BASE, FORT WORTH, TEXAS

Auger Type	Casing Elevation
Hollow Stem	
Drilled By	**Logged By**
J. Logan	K. Ward

Depth Feet	Samples	Symbol	STRATUM DESCRIPTION	Well Construction Details	Photo-ionization Reading	Benzene (ppm)	Toluene (ppm)	Xylene (ppm)	Ethyl Benzene (ppm)	Total BTXE (ppm)	T.P.H. (ppm)
			TOP SOIL, GRAVEL, organics								
			3.0 Dark brown CLAY			<.62	<.62	<.62	<.62	<.62	<10.0
5			5.0 Very dark brown CLAY								
			7.0 Brown CLAY with some calcareous nodules								
			9.0 Light to medium gray moist CLAY with tan SAND and some small GRAVEL			<.62	<.62	<.62	<.70	<.70	51.2
10			10.0 Grayish tan moist CLAY with some small shell like fragments								
			12.5 Light gray moist CLAY with occasional LIMESTONE fragments								
15			15.0 Light gray stiff CLAY grading to grayish tan and tan SAND, very moist, some IRON stains at 15 feet								
			17.5 Tan fine wet SAND grading to reddish yellow coarse SAND and CLAY SAND with LIMESTONE fragments			<.62	<.62	<.62	<.62	<.62	10.6
20			20.0 No sample recovery, encountered BEDROCK 20.5								
			BORING TERMINATED AT 20.5 FEET, CONVERTED TO MW-3								

Completion Depth	Date	Water Observations
20.5'	9/30/92	WATER ENCOUNTERED AT 15 FEET

Maxim Engineers, Inc.

iginal copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

TTENTION OWNER: Confidentially
rivilege Notice on Reverse Side

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

15514 9

NER OPERATION CONTRACTOR (Name) ADDRESS BLD 133D CARSWELL AFB FT WORTH 76127 (Street or RFD) (City) (State) (Zip)

ATION OF WELL:
County TARRANT . APPROX 5 miles in W TO N W (NE, SW, etc.) direction from FT WORTH (Town)

r must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official
nter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION: S.E. CORNER NIGHT LAKE + JENNINGS

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

SEE ATTACHED MAP MAPSCO PAGE 60 Q TARRANT

3) TYPE OF WORK (Check):
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AUGER

6) WELL LOG:
Drilling: Started 9-30 1982 Completed 9-30 1982

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
12	Surface	20

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other SAND
If Gravel Packed give interval ... from 7 ft. to 20 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	BROWN SAND + CLAY ROCK FILL
3	7	GREY CLAY
	15	TAN + GREY CLAY
15	20½	TAN SAND + GRAVEL
20½		LIMESTONE

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	SOLID	0	10	40
4	N	SCREEN	10	21	40

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 4½ ft. No. of Sacks Used 5
BENEDITE 4½ ft. to 7 ft. No. of Sacks Used 10 GAL
Method used BY HAND
Cemented by DRILLER

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71] FLUSH MOUNT

11) WATER LEVEL:
Static level NA ft. below land surface Date NA
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth
NA

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other NA
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS: NA
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata 15
Was a chemical analysis made? ☐ Yes ☒ No

y certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand
ilure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

IPANY NAME MAXIM ENGINEERS (Type or print) WELL DRILLER'S LICENSE NO. 2945 M

2342 FABENS (Street or RFD) DALLAS (City) TX (State) 75229 (Zip)

ned) James R Logan (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Use attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

D-012 (Rev. 05-18-90)

MW[illegible]

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

mw1

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Carswells Air force Base (Name) ADDRESS Ft Worth (Street or RFD) TX (City) (State) (Zip)

2) LOCATION OF WELL: County Tarrant . _____ miles in NW (NE, SW, etc.) Ft Worth direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other Auger

6) WELL LOG:
Date Drilling: Started 9/29 19 92 Completed 9/29 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
12	Surface	15

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 3 ft. to 15 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	fill
2	3	SAND W/ Pea gravel
3	10	Lt Brn SAND
10	15	HRd caliche

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	Plastic Screen	5	15	020
4	N	Plastic Risers	0	5	40

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 2 ft. No. of Sacks Used 1
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Hand mix
Cemented by CCI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: Type: Bentonite Pellets Depth: 2-3

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

DRILLER'S NAME CCI (Type or print) WELL DRILLER'S LICENSE NO. 3182 DM

ADDRESS 15289 Addison Rd (Street or RFD) Dallas (City) TX (State) 75248 (Zip)

(Signed) Johny Barr By Shelli Santos (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use on

770-92

PROJECT NO.: CAFB MW1

PROJECT NAME:

INSPECTOR:

CONTRACTOR: Lopk - Tex

PAGE 1 of 1

DATE: 9/29/92

ELEVATION:

DRILLER: Cascade Casing / Jobs

DEPTH	SAMPLE No.	BLOWS	RECOVERY	DESCRIPTION	USCS	WELL CONST	REMARKS
0				FILL			
2.5				SAND WITH PEA GRAVEL			
				4'-4.2' THIN LAYER DARK CLAY & SAND			SLIGHT ODOR
5.0				LIGHT BROWN SAND			MODERATE GASOLINE ODOR
				WATER			
7.5							
10				SAND BROWN + PEA GRAVEL			
				HARD CALICHE (POSSIBLY SANDSTONE ?)			
12.5				BROWN SAND + PEA GRAVEL			
15				CALICHE			

NOTES:

PROJECT NO.: 770-92 MW-2 PAGE 1 of 1
PROJECT NAME: CAFB DATE: 10/8/92
INSPECTOR: ELEVATION:
CONTRACTOR: LEAK-TEK DRILLER: Custom Coring / Jacky

DEPTH	SAMPLE No.	BLOWS	RECOVERY	DESCRIPTION	USCS	WELL CONST	REMARKS
0		PUSH		CLAYEY BROWN SAND			1' BENTONITE IN ABOVE GRADE COVER 4' CONCRETE PAD 4X
2.5		PUSH		BROWN SAND			1' BENTONITE BELOW GRADE
				SANDSTONE (CALICHE?)			5' SCREEN
5.0				BROWN SAND			5' SCREEN
				SANDSTONE (CALICHE?)			1' RISER TO GRADE
7.5				STOP AT 6'			~ 3.5' RISER ABOVE GRADE
10							
12.5							

NOTES: ABOVE GRADE FINISH TOP OF CASING ~ 3.5 ABOVE GRADE

MW 4 15K113

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side* MW 2

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER Carswell Air Force Base (Name) ADDRESS ft Worth TX (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL: County TARRANT, N.W. miles in (NE, SW, etc.) direction from Of Downtown Fort Worth (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG:
Date Drilling: Started 10/8 19 92 Completed 10/9 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
12	Surface	6

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 1 ft. to 6 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	1	Brn clay SAND
1	3	Brn SAND
3	6	Brn SANDstone CALICHE

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	Plastic Screen	1	6	020
4	N	Plastic Riser	0.2	1	40

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 0.5 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used Hand mix
Cemented by CCI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME CCI Env Drill (Type or print) WELL DRILLER'S LICENSE NO. 3182 DM

ADDRESS 15289 Addison Rd (Street or RFD) Dallas (City) TX (State) 75248 (Zip)

(Signed) Johnny Bass By Sheldon Sutton (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use or

PROJECT NO.: 770-92 MW 3 PAGE 1 of 1
PROJECT NAME: CAFB DATE: 10/8/92
INSPECTOR: ELEVATION:
CONTRACTOR: Leak-Tec DRILLER: Cimmaron Drilling / Jeb

DEPTH	SAMPLE No.	BLOWS	RECOVERY	DESCRIPTION	USCS	WELL CONST	REMARKS
0				ASPHALT 4"			
				BROWN CLAYEY SAND + PEA GRAVEL			
2.5							
		PUSH		BROWN SAND + PEA GRAVEL			
5.0							
7.5				SANDSTONE (CALICHE?)			
10.0							
12.5				FINISH AT 11'			

NOTES:

MW5 155115

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side MW3

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Carswell Air Force Base (Name) ADDRESS Ft Worth TX (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL: County TARRANT . ____ miles in NW (NE, SW, etc.) direction from Downtown Ft Worth (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. ____ Block No. ____ Township ____ Abstract No. ____ Survey Name ____

Distance and direction from two intersecting section or survey lines ____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other ____

6) WELL LOG:

Date Drilling: Started 10/9 1993 Completed 10/9 1993

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
12	Surface	11

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other ____
If Gravel Packed give interval . . . from 2 ft. to 11 ft.

From (ft.)	To (ft.)	Description and color of formation material
0.	0.4	Asphalt
0.4	3.0	Brn clayey SA. w/ Pea Grv.
3.0	7.0	Brn SA. w/ Pea Grv.
7.0	11.0	Brn SAND Stone Caliche

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	Plastic Screen	3.5	11	020
4	N	Plastic Riser	0	3.5	40

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 1 ft. No. of Sacks Used 1
____ ft. to ____ ft. No. of Sacks Used ____
Method used Hand mix
Cemented by CCI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

11) WATER LEVEL:
Static level ____ ft. below land surface Date ____
Artesian flow ____ gpm. Date ____

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

12) PACKERS: Type Depth
Bentonite Pellets 1.0 - 2.0

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME CCI ENV. Drill (Type or print) WELL DRILLER'S LICENSE NO. 3182 DM

ADDRESS 15289 Addison Rd (Street or RFD) Dallas (City) TX (State) 75249 (Zip)

Signed) John Barr By Shelb Dunton (Licensed Well Driller) (Signed) ____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC u

ATCH 2 Well Report for MW-5

Hole No. ST16-1

DRILLING LOG	DIVISION SWD	INSTALLATION FT WORTH	SHEET 1 OF 1 SHEETS

1. PROJECT: BASE SERVICE STATION, CARSWELL AFB
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): ST16-1
5. NAME OF DRILLER: Blevins
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE: 8'
10. SIZE AND TYPE OF BIT: 8" cont aug & 6" core
11. DATUM FOR ELEVATION SHOWN (USGS or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: MKT CO
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 12; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: ***
16. DATE HOLE: STARTED 1 Dec 92; COMPLETED 1 Dec 92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Bob McVey PRB

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0 to 0.25 - Asphalt.	auger		All samples collected as described in drill instructions.
			0.25 to 0.6	No loss	1 & QC	
			GRAVEL - base, coarse to fine, chemical odor, white, clayey/sandy.	- -	2	*** Water at 4.10' at 0805 hrs. on 2 Dec. 1992.
				Lost 2.5'		
	8'		0.6 to 2.2	- -		Hole grouted up after water sampled on 2 Dec 92.
			CLAY - high plasticity, stiff, moist, black, sandy/gravelly, calc, fill? Chemical odor.			
			2.2 to 7.5?			Note: The 7.5' depth was derived from the fact that only 0.5' of sand was on rock and hole was open to 8'! Sand contact might be higher?
			SILT/CALICHE - low to no plasticity, very stiff to hard, dry, very pale brown, numerous fossil shells.			
			7.5 to 8.0			Soil Samples
			SAND - fine to coarse, wet, strong brown,, gravelly, cementation. Chemical odor.			1 & QC. 2.0 to 3.0 2. 3.5 to 4.0

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT | HOLE NO.

Hole No. ST16-2

15N118

DRILLING LOG | DIVISION: S&D | INSTALLATION: FT WORTH | SHEET 1 OF 1 SHEETS

1. PROJECT: BASE SERVICE STATION, CARSWELL AFB
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): ST16-2
5. NAME OF DRILLER: BREWER
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE: 8'
10. SIZE AND TYPE OF BIT: 8" aug & 6" bbl.
11. DATUM FOR ELEVATION SHOWN (GS or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: NITCO
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 12 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: ***
16. DATE HOLE: STARTED 1 Dec 92 | COMPLETED 1 Dec 92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Bob McVey RM

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0 to 0.2 - Asphalt.	auger		All samples collected as per drill instructions. Hole grouted up after water samples on 2 Dec 92.
			0.2 to 1.0	NO loss	QA&1	
			GRAVEL - base, coarse to fine, white, gray, clayey/sandy, calc.	Lost 2'	2	*** Water at 4.11' on 2 Dec 92.
	8'		1.0 to 5.1			
			CLAY - high plasticity, stiff, moist, black to very dark brown, gravelly and sandy, calc, chemical odor, fill, nail found.			Soil Samples 1.& QA. 2.0 to 3.0 2. 4.0 to 5.0
			5.1 to 8.0			
			SAND - mostly fine with a thin zone of fine.medium grain,near top, wet, gray to light brown to olive with some black, gravel zone at 8', chemical odor.			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. | PROJECT | HOLE NO.

Hole No. ST16-3

DRILLING LOG	DIVISION SWD	INSTALLATION FT WORTH	SHEET 1 OF 1 SHEETS
1. PROJECT: Base Service Station, Carswell AFB		10. SIZE AND TYPE OF BIT: 8" aug & 6" bbl.	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY: USCE		12. MANUFACTURER'S DESIGNATION OF DRILL: NITCO	
4. HOLE NO. (As shown on drawing title and file number): ST16-3		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 12	UNDISTURBED 0
5. NAME OF DRILLER: BREWER		14. TOTAL NUMBER CORE BOXES: 0	
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER: ***	
7. THICKNESS OF OVERBURDEN		16. DATE HOLE: STARTED 1 Dec 92	COMPLETED 1 Dec 92
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE: 8'		18. TOTAL CORE RECOVERY FOR BORING: %	
		19. SIGNATURE OF INSPECTOR: Bob McVey PB	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0 to 0.2 - Asphalt.	auger		All samples collected as per drill instructions. Hole grouted up after water samples collected on 2 Dec. 92.
			0.2 to 1.2	— —		
			GRAVEL - base, coarse to fine, moist/very moist, chemical odor, light gray, very clayey, sandy, calc.	L0.2'	1	
				— —	2	
				L1.5'		*** Water at 4.29' on 2 Dec 92.
	8'		1.2 to 4.7	— —		
			CLAY - fill? high plasticity, medium stiff, moist, chemical odor, sandy/gravelly, black to very dark brown, calc.			Soil Samples 1. 2.0 to 3.0 2. 4.0 to 4.7
			4.7 to 8.0			
			SAND - fine, very moist to wet, dark brown to light gray to strong brown, some chemical odor strong at top and seems to decrease with depth, cementation at 7.8 to 8'.			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

15[illegible]21

PROFESSIONAL SERVICE INDUSTRIES, INC.

LING NO. MW-1 PROJECT NO. 34025 PROJECT NAME Chevco

DATE/TIME START 4/27/93 DATE/TIME END 4/27/93 DRILL CREW Flair

DRILLING METHOD: AUGER 0 FT TO 20 FT, ROTARY ___ FT TO ___ FT DRILL RIG 75

AUGER/BIT SIZE(S) & INTERVAL(S) 6¼ H.S. SURFACE COVER Grass

G.S. ELEV. ___ BORING COORDINATES ___ WATER DURING DRILLING //

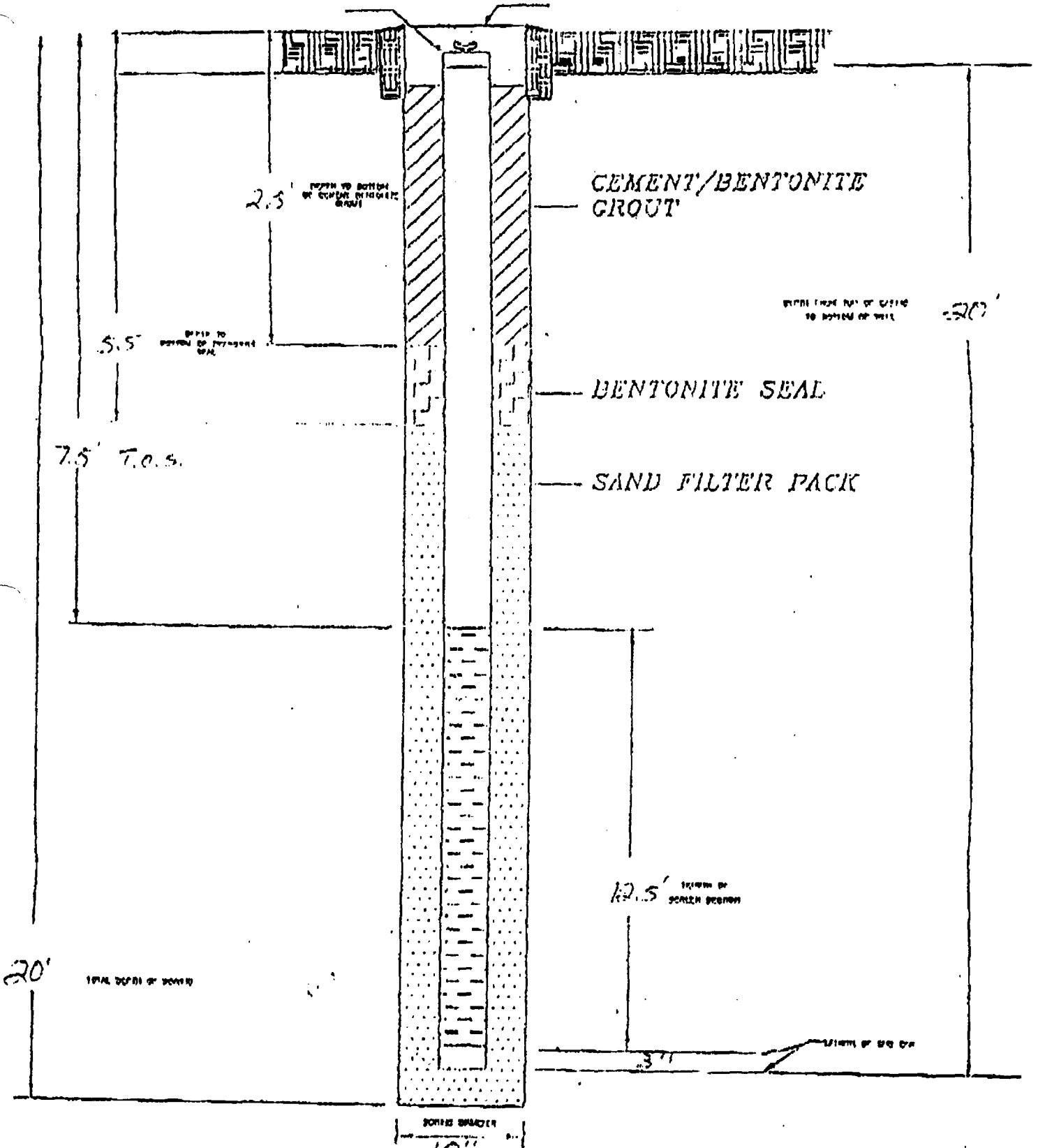
WATER AT COMPLETION // DELAYED WATER LEVEL ___

DATE GROUTED ___ MATERIAL(S) & QUANTITY ___

DEPTH FT	SAMPLE TYPE & INTERVAL	MOISTURE	SOIL DESCRIPTION & VISUAL CLASSIFICATION	SPT	PID (ppm)	HAND PENETROMETER (tsf)	OTHER
			Br silty clay				
5			Br SANDY Clay				
			8.5'				
10			(ODER & Soil Discoloration)				
			Becoming SANDY less clay				
15							
20			T. D. 20'				
25							

15[illegible]22

PROJECT CARSWELL AFB MONITOR WELL I.D. NO. MW-1



DATE 4/23/93	Professional Service Industries, Inc. 4007 Stirling Way Dallas, Texas 75237
PROJECT NO. 340[illegible]35	
DRAWN BY MWR	CHECKED BY [illegible]

155123

PROFESSIONAL SERVICE INDUSTRIES, INC.

BORING NO. MW-2 PROJECT NO. 34025 PROJECT NAME CHEVCO

DATE/TIME START 4/27/93 DATE/TIME END 4/27/93 DRILL CREW FLAIR

DRILLING METHOD: AUGER 0 FT TO 20 FT, ROTARY ___ FT TO ___ FT DRILL RIG 75

AUGER/BIT SIZE(S) & INTERVAL(S) 6 1/4 H.S. SURFACE COVER GRASS

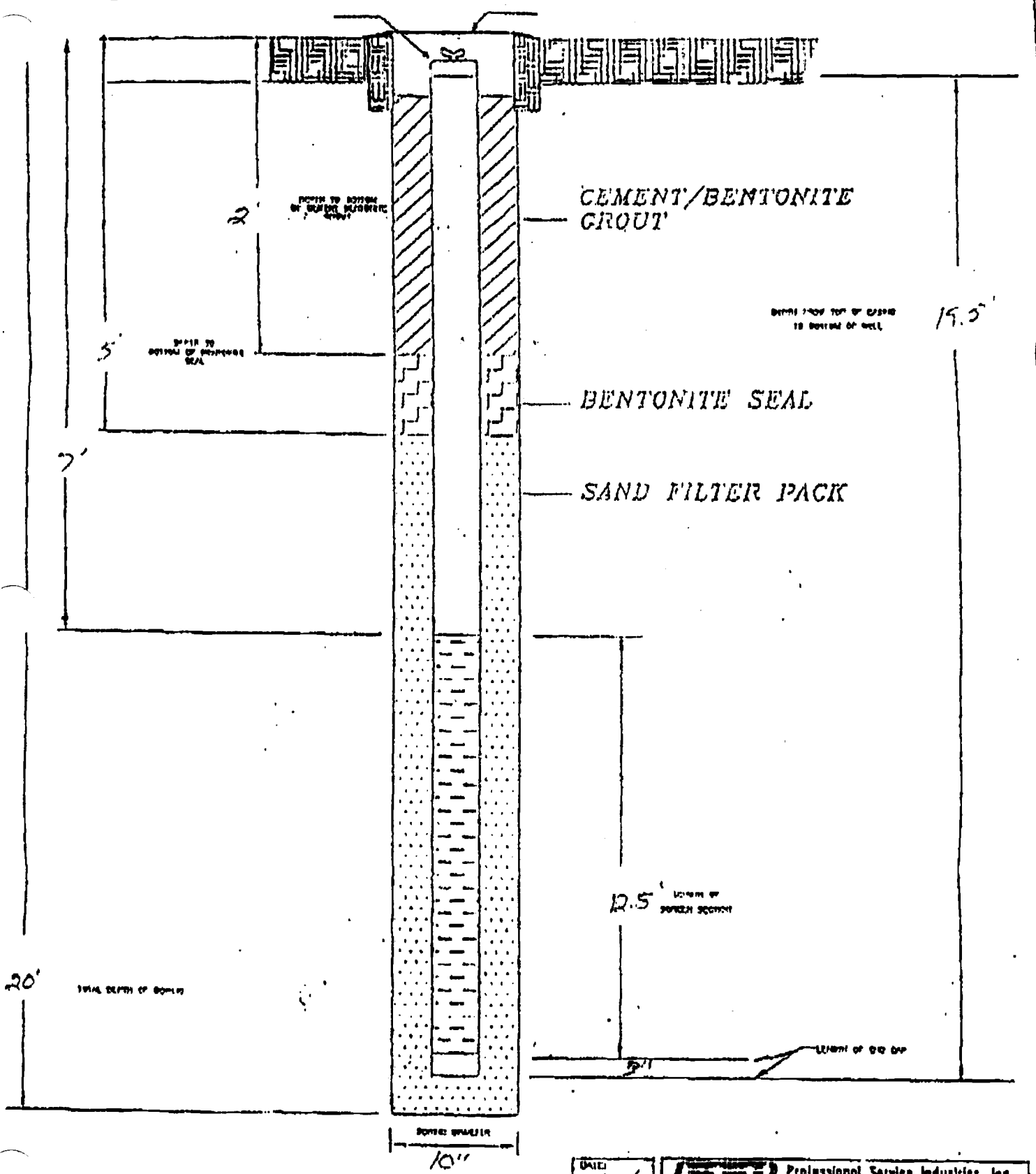
G.S. ELEV. ___ BORING COORDINATES ___ WATER DURING DRILLING 11'

WATER AT COMPLETION 11' DELAYED WATER LEVEL ___

DATE GROUTED ___ MATERIAL(S) & QUANTITY ___

DEPTH FT	SAMPLE TYPE & INTERVAL	MOISTURE	SOIL DESCRIPTION & VISUAL CLASSIFICATION	SPT	PID (ppm)	HAND PENETROMETER (tsf)	OTHER
			Br Silty Clay				
-5-			Br SANDY CLAY				
-10-			C 8.5' ODER & SOIL DISCOLORATION)				
			Becoming SANDY Less Clay				
-15-							
-20-			T.D 20'				
-25-							

PROJECT: CARSWELL AFB — INJECTION WELL I.D. NO.: 2



DATE: 4/27/93
PROJECT NO.: 3K125
DRAWN BY: FMER

Professional Service Industries, Inc.
4007 Sinking Way
Dallas, Texas 75237

CHECKED:

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side # 34025

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, TX 78711

1) OWNER CARSWELL AIR FORCE BASE (Name) ADDRESS Rogers & Jennings (Street or R.F.D.) FT. WORTH (City) TX (State) (Zip)

2) LOCATION OF WELL: County TARRANT, _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines SEE ATTACHED

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check): ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☒ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:

Date Drilling: Started 4/27 19 93 Completed 4/27 19 93

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	20'

From (ft.) To (ft.) Description and color of formation material

2 WELLS

SEE ALL ATTACHED MAP, LOG, Ingram's

(Use reverse side if necessary)

7) BOREHOLE COMPLETION: ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☒ Other #1 SAND

If Gravel Packed give interval . . . from _____ ft. to _____ ft.

SEE ATTACHED

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC RISER	SURF.	7.5	SCH 40
4	N	PVC SCREEN	7.5	20	10-20

9) CEMENTING DATA [Rule 287.44(1)]

Cemented from _____ ft. to _____ ft. No. of Sacks Used _____

_____ ft. to _____ ft. No. of Sacks Used _____

Method used _____

Cemented by SEE ATTACHED

10) SURFACE COMPLETION

☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]

☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]

☐ Flitless Adapter Used [Rule 287.44(3)(B)]

☐ Approved Alternative Procedure Used [Rule 287.71]

SEE ATTACHED

11) WATER LEVEL:

Static level 11' ft. below land surface Date 4/27/93

Artesian flow _____ gpm. Date _____

12) PACKERS: Type _____ Depth _____

13) TYPE PUMP:

☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____

Depth to pump bowls, cylinder, jet, etc. _____ ft.

14) WELL TESTS:

Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated

Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:

Did you knowingly penetrate any strata which contained undesirable constituents?

☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"

Type of water? _____ Depth of strata _____

Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME PSI (Type or print) WELL DRILLER'S LICENSE NO. 2548 M

ADDRESS 4017 Skillings Way (Street or R.F.D.) Dallas (City) TX (State) 75237 (Zip)

Ray Zinn (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No _____ Legend on map _____

WR 012 (Rev. 05-18-93)

TEXAS WATER COMMISSION COPY

APPENDIX D

LABORATORY ANALYTICAL RESULTS

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155127

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-1
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-1 3-2523
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	1.7 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		1.7 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	94.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

153128

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-1
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-1 3-2523
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	94.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

153129

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-2
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SAV-1 3-2524
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	50 µg/L	5400 µg/L
Toluene	50 µg/L	8000 µg/L
Ethyl benzene	50 µg/L	1900 µg/L
Xylenes	50 µg/L	8000 µg/L
BTEX (total)		23300 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	78.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155130

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-2
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SAV-1 3-2524
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	5300 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	78.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 10 May 1993
Location: Base Service Station
Field Number: SAV-1
Date received: 11 May 1993
SWD Number: 3-2524
Sample Matrix: Water
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	2.0	11.8	mg/L	05/17/93	1	418.1
dilution factor = 10.						
TDS	10	612	mg/L	05/13/93	1	160.1
dup		612				
RPD		0%				

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155132

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-3
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SAV-2 3-2525
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS				
TEST REQUESTED	DETECTION LIMIT		RESULTS	
Benzene	50	µg/L	6900	µg/L
Toluene	50	µg/L	12000	µg/L
Ethyl benzene	50	µg/L	1900	µg/L
Xylenes	50	µg/L	7400	µg/L
BTEX (total)			28200	µg/L #

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
Bromofluorobenzene(SS)	50.0	µg/L	78.0	%

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155133

DATE RECEIVED : 11-MAY-1993

REPORT NUMBER : D93-5472-3
REPORT DATE : 19-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SAV-2 3-2525
PROJECT : Carswell AFB (3-2523-2525)
DATE SAMPLED : 10-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 13-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	7100 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	78.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

150134

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 10 May 1993
Location: Base Service Station
Field Number: SAV-2
Date received: 11 May 1993
SWD Number: 3-2525
Sample Matrix: Water
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.4	8.8	mg/L	05/17/93	1	418.1
dup		9.0				
RPD		2%				
dilution factor = 2.						
TDS	10	620	mg/L	05/13/93	1	160.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

15X135

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-1
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-2 3-2530
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	1.5 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		1.5 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	91.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

15[illegible]136

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-1
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-2 3-2530
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	91.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155137

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-2
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-1 3-2531
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS			
TEST REQUESTED	DETECTION LIMIT	RESULTS	
Benzene	50 µg/L	1400 µg/L	
Toluene	50 µg/L	7900 µg/L	
Ethyl benzene	50 µg/L	4600 µg/L	
Xylenes	50 µg/L	11000 µg/L	
BTEX (total)		24900 µg/L	#

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	85.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

153138

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-2
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-1 3-2531
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	< 500 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	85.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

154139

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 12 May 1993
Location: Base Service Station
Field Number: MW1
Date received: 13 May 1993
SWD Number: 3-2531
Sample Matrix: Water
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.4	8.2	mg/L	05/17/93	1	418.1
dilution factor = 2.						
TDS	10	856	mg/L	05/14/93	1	160.1
dup		858				
RPD		0%				

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

155149

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-3
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-2 3-2532
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 10

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	10 µg/L	< 10 µg/L
Toluene	10 µg/L	22 µg/L
Ethyl benzene	10 µg/L	1600 µg/L
Xylenes	10 µg/L	3400 µg/L
BTEX (total)		5020 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	87.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

15511

DATE RECEIVED : 13-MAY-1993

REPORT NUMBER : D93-5568-3
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-2 3-2532
PROJECT : Carswell AFB (3-2530-2532)
DATE SAMPLED : 12-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 15-MAY-1993
DILUTION FACTOR : 10

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	100 µg/L	380 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	87.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 12 May 1993
Location: Base Service Station
Field Number: MW2
Date received: 13 May 1993
SWD Number: 3-2532
Sample Matrix: Water
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	3.4	mg/L	05/17/93	1	418.1
TDS	10	872	mg/L	05/14/93	1	160.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

154143

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-1
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-4 3-2540
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS			
TEST REQUESTED	DETECTION LIMIT	RESULTS	
Benzene	1.0 µg/L	< 1.0 µg/L	
Toluene	1.0 µg/L	< 1.0 µg/L	
Ethyl benzene	1.0 µg/L	< 1.0 µg/L	
Xylenes	1.0 µg/L	< 1.0 µg/L	
BTEX (total)		< 1.0 µg/L	#

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	98.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155114

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-1
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-4 3-2540
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	98.0 %

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

15145

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-2
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-4 3-2541
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS				
TEST REQUESTED	DETECTION LIMIT		RESULTS	
Benzene	50	µg/L	5100	µg/L
Toluene	50	µg/L	9900	µg/L
Ethyl benzene	50	µg/L	1400	µg/L
Xylenes	50	µg/L	6700	µg/L
BTEX (total)			23100	µg/L #

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
Bromofluorobenzene(SS)	50.0	µg/L	87.0	%

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155116

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-2
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-4 3-2541
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	520 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	87.0 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

151147

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: MW4
Date received: 14 May 1993
SWD Number: 3-2541
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	5.0	mg/L	05/17/93	1	418.1
TDS	10	686	mg/L	05/17/93	1	160.1
dup		642				
RPD		7%				

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155148

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-3
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : BSS-B 3-2542
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 100

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	100 µg/L	13000 µg/L
Toluene	100 µg/L	19000 µg/L
Ethyl benzene	100 µg/L	1800 µg/L
Xylenes	100 µg/L	8300 µg/L
BTEX (total)		42100 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	79.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

153119

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-3
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : BSS-B 3-2542
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 100

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	1000 µg/L	7600 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	79.0 %

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

155150

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: BSS-B
Date received: 14 May 1993
SWD Number: 3-2542
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	2.0	10.1	mg/L	05/17/93	1	418.1
dilution factor = 10.						
TDS	10	730	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155151

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-4
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-6 3-2543
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	94.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155152

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-4
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-6 3-2543
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	340 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	97.0 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

155153

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 18 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: MW6
Date received: 14 May 1993
SWD Number: 3-2543
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit		Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	<	0.2	mg/L	05/17/93	1	418.1
TDS	10		588	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-5
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-3 3-2544
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	1.7 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		1.7 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	99.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

150155

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-5
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-3 3-2544
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	99.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: MW3
Date received: 14 May 1993
SWD Number: 3-2545
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit		Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	<	0.2	mg/L	05/20/93	1	418.1
TDS	10		464	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

151157

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-6
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-3 3-2545
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	100 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-6
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-3 3-2545
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	100 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

155159

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: BSS-A
Date received: 14 May 1993
SWD Number: 3-2546
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	0.3	mg/L	05/20/93	1	418.1
dup		0.4				
RPD		29%				
TDS	10	554	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-7
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : BSS-A 3-2546
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	102 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-7
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : BSS-A 3-2546
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 18-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	102 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

15S1S2

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: MW5
Date received: 14 May 1993
SWD Number: 3-2547
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	3.1	mg/L	05/20/93	1	418.1
TDS	10	630	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155183

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-8
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-5 3-2547
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	4100 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	86.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155134

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-8
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-5 3-2547
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	50 µg/L	4900 µg/L
Toluene	50 µg/L	2000 µg/L
Ethyl benzene	50 µg/L	1100 µg/L
Xylenes	50 µg/L	3100 µg/L
BTEX (total)		11100 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	86.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

155135

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 13 May 1993
Location: Base Service Station
Field Number: MW5 QC
Date received: 14 May 1993
SWD Number: 3-2548
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	2.7	mg/L	05/20/93	1	418.1
TDS	10	660	mg/L	05/17/93	1	160.1

NDRC LABORATORIES, INC 155166

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-9
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-5/QC 3-2548
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	500 µg/L	4300 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	87.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

1551.S7

DATE RECEIVED : 14-MAY-1993

REPORT NUMBER : D93-5627-9
REPORT DATE : 20-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : MW-5/QC 3-2548
PROJECT : Carswell AFB (3-2540-2548)
DATE SAMPLED : 13-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 19-MAY-1993
DILUTION FACTOR : 50

BTEX ANALYSIS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Benzene	50	µg/L	5100	µg/L	
Toluene	50	µg/L	1700	µg/L	
Ethyl benzene	50	µg/L	1200	µg/L	
Xylenes	50	µg/L	2900	µg/L	
BTEX (total)			10900	µg/L	#

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
Bromofluorobenzene(SS)	50.0	µg/L	87.0	%

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NONHALOGENATED VOLATILE ORGANICS
EPA METHOD 8015

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-183
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY		DATE SAMPLED:	05/13/1993
PROJECT: CARSWELL AFB		DATE RECEIVED:	05/15/1993
CONTRACT #: DACW63-91-D-0033		DATE EXTRACTED:	NA
FIELD ID: MW-5/QA		DATE ANALYZED:	05/20/1993
		EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 5030
		INSTRUMENT ID:	SVG4
		MATRIX:	AQUEOUS
		% MOISTURE:	NA
		REPORT WT.:	NA
ELI SAMPLE ID: 9305183-01A		SAMPLE VOL./WT.:	5ml
SWD NO.: 3-2549		DILUTION FACTOR:	500

COMPOUND	CONCENTRATION ug/L (ppb)	DETECTION LIMIT ug/L (ppb) *
Ethylether	<1000	1000
Ethanol	<1000	1000
Methyl Ethyl Ketone (MEK)	<1000	1000
Methyl Isobutyl Ketone (MIBK)	<1000	1000
Methyl-T-Butyl Ether (MTBE)	18600	1000

SURROGATE	RECOVERY
1.1.1 Trichloroethane	103%

Note: All positively identified compounds were second column or second detector confirmed.
* Higher detection limit is due to high analyte concentration.

Susie Yang
Chemist

June 4, 1993
Date

155189

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-183
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS
SWD LABORATORY
PROJECT: CARSWELL AFB
CONTRACT #: DACW63-91-D-0033
FIELD ID: MW-5/QA

ELI SAMPLE ID: 9305183-01A
SWD NO.: 3-2549

DATE SAMPLED:	05/13/1993
DATE RECEIVED:	05/15/1993
DATE EXTRACTED:	NA
DATE ANALYZED:	05/20/1993
EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 5030
INSTRUMENT ID:	VG-4
MATRIX:	AQUEOUS
% MOISTURE:	NA
REPORT WT.:	NA
SAMPLE VOL./WT.:	25ul
DILUTION FACTOR:	200, 1000

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb) *
V1	Benzene	7550	500 **
V2	Chlorobenzene	<100	100
V3	1,2-Dichlorobenzene	<100	100
V4	1,3-Dichlorobenzene	<100	100
V5	1,4-Dichlorobenzene	<100	100
V6	Ethyl benzene	1170	100
V7	Toluene	2700	100
V8	Xylenes (Dimethyl benzenes)	3680	100

Fluorobenzene (Surrogate) 93%

Note: All positively identified compounds were second column or second detector confirmed.
* Higher detection limit is due to matrix interference.
** A lower sample volume or higher dilution factor was used for the quantification of this compound due to high analyte concentration.

Huey-Chen Chow — Chemist
June 4, 1993 — Date

151170

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
EPA METHOD 418.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-183
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY	DATE SAMPLED:	05/13/1993
PROJECT: CARSWELL AFB	DATE RECEIVED:	05/15/1993
CONTRACT #: DACW63-91-D-0033	DATE EXTRACTED:	05/24/1993
FIELD ID: MW-5/QA	DATE ANALYZED:	05/24/1993
	EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 418.1
	INSTRUMENT ID:	FTIR
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305183-01A	SAMPLE VOL./WT.:	1 L
SWD NO.: 3-2549	DILUTION FACTOR:	1

CONCENTRATION [mg/L (ppm)]	DETECTION LIMIT [mg/L (ppm)]
8.6	0.1

Ren Zheng, Ph.D. — Chemist
June 2, 1993 — Date

TOTAL DISSOLVED SOLIDS
EPA METHOD 160.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-183
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY	DATE SAMPLED:	05/13/1993
PROJECT: CARSWELL AFB	DATE RECEIVED:	05/15/1993
CONTRACT #: DACW63-91-D-0033	DATE EXTRACTED:	NA
FIELD ID: MW-5/QA	DATE ANALYZED:	05/19/1993
	EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 160.1
	INSTRUMENT ID:	B1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9305183-01A	REPORT WT.:	NA
SWD NO.: 3-2549	SAMPLE VOL./WT.:	100ml

CONCENTRATION [mg/L (ppm)]	DETECTION LIMIT [mg/L (ppm)]
644	5.0

Cindy Gao
Chemist

June 2, 1993
Date

TOTAL DISSOLVED SOLIDS
EPA METHOD 160.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-183
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS
SWD LABORATORY
PROJECT: CARSWELL AFB
CONTRACT #: DACW63-91-D-0033
FIELD ID: MW-5/QA

ELI SAMPLE ID: 9305183-03A
SAMPLE ID: 3-2549 DUPLICATE

DATE SAMPLED:	NA
DATE RECEIVED:	05/15/1993
DATE EXTRACTED:	NA
DATE ANALYZED:	05/19/1993
EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 160.1
INSTRUMENT ID:	B1
MATRIX:	AQUEOUS
% MOISTURE:	NA
REPORT WT.:	NA
SAMPLE VOL./WT.:	100ml

CONCENTRATION [mg/L (ppm)]	DETECTION LIMIT [mg/L (ppm)]
654	5.0

RPD = 2%

Cindy Gao — Chemist
June 2, 1993 — Date

NDRC LABORATORIES, INC 153173

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-1
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-S3 3-2512
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8240
ANALYZED BY : JKA
ANALYZED ON : 17-MAY-1993
DILUTION FACTOR : 1

VOLATILE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Chloromethane	10.0 µg/L	< 10.0 µg/L
Bromomethane	10.0 µg/L	< 10.0 µg/L
Vinyl chloride	10.0 µg/L	< 10.0 µg/L
Chloroethane	10.0 µg/L	< 10.0 µg/L
Methylene chloride	5.0 µg/L	< 5.0 µg/L
Acetone	100 µg/L	< 100 µg/L
Carbon disulfide	5.0 µg/L	< 5.0 µg/L
1,1-Dichloroethene	5.0 µg/L	< 5.0 µg/L
1,1-Dichloroethane	5.0 µg/L	< 5.0 µg/L
1,2-Dichloroethene	5.0 µg/L	< 5.0 µg/L
Chloroform	5.0 µg/L	< 5.0 µg/L
1,2-Dichloroethane	5.0 µg/L	< 5.0 µg/L
2-Butanone	50 µg/L	< 50 µg/L
1,1,1-Trichloroethane	5.0 µg/L	< 5.0 µg/L
Carbon tetrachloride	5.0 µg/L	< 5.0 µg/L
Vinyl acetate	50.0 µg/L	< 50.0 µg/L
Bromodichloromethane	5.0 µg/L	< 5.0 µg/L

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155174

REPORT NUMBER : D93-5364-1
ANALYSIS METHOD : EPA 8240

VOLATILE ORGANICS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,2-Dichloropropane	5.0	µg/L	<	5.0	µg/L
cis-1,3-Dichloropropene	5.0	µg/L	<	5.0	µg/L
Trichloroethene	5.0	µg/L	<	5.0	µg/L
Chlorodibromomethane	5.0	µg/L	<	5.0	µg/L
1,1,2-Trichloroethane	5.0	µg/L	<	5.0	µg/L
Benzene	5.0	µg/L	<	5.0	µg/L
trans-1,3-Dichloropropene	5.0	µg/L	<	5.0	µg/L
Bromoform	5.0	µg/L	<	5.0	µg/L
2-Chloroethylvinyl ether	10.0	µg/L	<	10.0	µg/L
4-Methyl-2-pentanone	50.0	µg/L	<	50.0	µg/L
2-Hexanone	50.0	µg/L	<	50.0	µg/L
Tetrachloroethene	5.0	µg/L	<	5.0	µg/L
Toluene	5.0	µg/L	<	5.0	µg/L
1,1,2,2-Tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Chlorobenzene	5.0	µg/L	<	5.0	µg/L
Ethylbenzene	5.0	µg/L	<	5.0	µg/L
Styrene	5.0	µg/L	<	5.0	µg/L
Xylenes	5.0	µg/L	<	5.0	µg/L

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
1,2-Dichloroethane-d4 (SS)	50.0	µg/L	101	%
Toluene-d8 (SS)	50.0	µg/L	105	%
Bromofluorobenzene (SS)	50.0	µg/L	103	%

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

151175

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-1
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-S3 3-2512
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 12-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	93.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155175

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-1
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-S3 3-2512
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 12-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	93.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155177

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-1
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TB-S3 3-2512
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYZED BY : JKA
ANALYZED ON : 17-MAY-1993

TENTATIVELY IDENTIFIED COMPOUNDS			
COMPOUND	RETENTION TIME	FRACTION	RESULT
No compounds detected		VOA	< 10 µg/L

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 15 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 05 May 1993
Location: Base Service Station
Field Number: SW-1
Date received: 06 May 1993
SWD Number: 3-2513
Sample Matrix: Water
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	< 0.2	mg/L	05/10/93	1	418.1
dup		< 0.2				
RPD		0%				

NDRC LABORATORIES, INC. 150179

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-2
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW1 3-2513
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8240
ANALYZED BY : JKA
ANALYZED ON : 17-MAY-1993
DILUTION FACTOR : 1

VOLATILE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Chloromethane	10.0 µg/L	< 10.0 µg/L
Bromomethane	10.0 µg/L	< 10.0 µg/L
Vinyl chloride	10.0 µg/L	< 10.0 µg/L
Chloroethane	10.0 µg/L	< 10.0 µg/L
Methylene chloride	5.0 µg/L	< 5.0 µg/L
Acetone	100 µg/L	< 100 µg/L
Carbon disulfide	5.0 µg/L	< 5.0 µg/L
1,1-Dichloroethene	5.0 µg/L	< 5.0 µg/L
1,1-Dichloroethane	5.0 µg/L	< 5.0 µg/L
1,2-Dichloroethene	5.0 µg/L	< 5.0 µg/L
Chloroform	5.0 µg/L	< 5.0 µg/L
1,2-Dichloroethane	5.0 µg/L	< 5.0 µg/L
2-Butanone	50 µg/L	< 50 µg/L
1,1,1-Trichloroethane	5.0 µg/L	< 5.0 µg/L
Carbon tetrachloride	5.0 µg/L	< 5.0 µg/L
Vinyl acetate	50.0 µg/L	< 50.0 µg/L
Bromodichloromethane	5.0 µg/L	< 5.0 µg/L

NDRC LABORATORIES, INC 155139

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D93-5364-2
ANALYSIS METHOD : EPA 8240

VOLATILE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
1,2-Dichloropropane	5.0 µg/L	< 5.0 µg/L
cis-1,3-Dichloropropene	5.0 µg/L	< 5.0 µg/L
Trichloroethene	5.0 µg/L	< 5.0 µg/L
Chlorodibromomethane	5.0 µg/L	< 5.0 µg/L
1,1,2-Trichloroethane	5.0 µg/L	< 5.0 µg/L
Benzene	5.0 µg/L	< 5.0 µg/L
trans-1,3-Dichloropropene	5.0 µg/L	< 5.0 µg/L
Bromoform	5.0 µg/L	< 5.0 µg/L
2-Chloroethylvinyl ether	10.0 µg/L	< 10.0 µg/L
4-Methyl-2-pentanone	50.0 µg/L	< 50.0 µg/L
2-Hexanone	50.0 µg/L	< 50.0 µg/L
Tetrachloroethene	5.0 µg/L	< 5.0 µg/L
Toluene	5.0 µg/L	< 5.0 µg/L
1,1,2,2-Tetrachloroethane	5.0 µg/L	< 5.0 µg/L
Chlorobenzene	5.0 µg/L	< 5.0 µg/L
Ethylbenzene	5.0 µg/L	< 5.0 µg/L
Styrene	5.0 µg/L	< 5.0 µg/L
Xylenes	5.0 µg/L	< 5.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
1,2-Dichloroethane-d4 (SS)	50.0 µg/L	102 %
Toluene-d8 (SS)	50.0 µg/L	106 %
Bromofluorobenzene (SS)	50.0 µg/L	101 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155131

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-2
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW1 3-2513
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8310
ANALYZED BY : JS
ANALYZED ON : 17-MAY-1993
DILUTION FACTOR : 1

POLYNUCLEAR AROMATIC HYDROCARBONS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Acenaphthene	18 µg/L	< 18 µg/L
Acenaphthylene	10 µg/L	< 10 µg/L
Anthracene	6.6 µg/L	< 6.6 µg/L
Benzo(a)anthracene	0.13 µg/L	< 0.13 µg/L
Benzo(b)fluoranthene	0.18 µg/L	< 0.18 µg/L
Benzo(k)fluoranthene	0.17 µg/L	< 0.17 µg/L
Benzo(g,h,i)perylene	0.76 µg/L	< 0.76 µg/L
Benzo(a)pyrene	0.23 µg/L	< 0.23 µg/L
Chrysene	1.5 µg/L	< 1.5 µg/L
Dibenzo(a,h)anthracene	0.30 µg/L	< 0.30 µg/L
Fluoranthene	2.1 µg/L	< 2.1 µg/L
Fluorene	2.1 µg/L	< 2.1 µg/L
Indeno(1,2,3-cd)pyrene	0.43 ug/L	< 0.43 ug/L
Naphthalene	10 µg/L	< 10 µg/L
Phenanthrene	6.4 µg/L	< 6.4 µg/L
Pyrene	2.7 µg/L	< 2.7 µg/L

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

150182

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-2
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW1 3-2513
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 12-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	93.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

15[illegible]133

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-2
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW1 3-2513
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : CNA
ANALYZED ON : 12-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	93.0 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155134

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-2
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW1 3-2513
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYZED BY : JKA
ANALYZED ON : 17-MAY-1993

TENTATIVELY IDENTIFIED COMPOUNDS			
COMPOUND	RETENTION TIME	FRACTION	RESULT
No compounds detected		VOA	< 10 µg/L

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

155135

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 15 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 05 May 1993
Location: Base Service Station
Field Number: SED-1
Date received: 06 May 1993
SWD Number: 3-2514
Sample Matrix: Sediment
Analyst: SAJ

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	20	118	mg/Kg	05/10/93	1	418.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

15[illegible]38

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-3
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Soil
ID MARKS : SED1 (Soil) 3-2514
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8310
ANALYZED BY : JS
ANALYZED ON : 17-MAY-1993
DILUTION FACTOR : 1

POLYNUCLEAR AROMATIC HYDROCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Acenaphthene	1210	µg/Kg	<	1210	µg/Kg
Acenaphthylene	1540	µg/Kg	<	1540	µg/Kg
Anthracene	442	µg/Kg	<	442	µg/Kg
Benzo(a)anthracene	8.7	µg/Kg	<	8.7	µg/Kg
Benzo(b)fluoranthene	12.1	µg/Kg		23.6	µg/Kg
Benzo(k)fluoranthene	11.4	µg/Kg	<	11.4	µg/Kg
Benzo(g,h,i)perylene	50.9	µg/Kg	<	50.9	µg/Kg
Benzo(a)pyrene	15.4	µg/Kg		20.9	µg/Kg
Chrysene	101	µg/Kg	<	101	µg/Kg
Dibenz(a,h)anthracene	20.1	µg/Kg		20.5	µg/Kg
Fluoranthene	141	µg/Kg	<	141	µg/Kg
Fluorene	141	µg/Kg	<	141	µg/Kg
Indeno(1,2,3-cd)pyrene	28.8	µg/Kg	<	28.8	µg/Kg
Naphthalene	1210	µg/Kg	<	1210	µg/Kg
Phenanthrene	429	µg/Kg	<	429	µg/Kg
Pyrene	181	µg/Kg	<	181	µg/Kg

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155137

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-3
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Soil
ID MARKS : SED1 (Soil) 3-2514
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 14-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	2.0 µg/Kg	< 2.0 µg/Kg
Toluene	2.0 µg/Kg	< 2.0 µg/Kg
Ethyl benzene	2.0 µg/Kg	< 2.0 µg/Kg
Xylenes	2.0 µg/Kg	< 2.0 µg/Kg
BTEX (total)		< 2.0 µg/Kg #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/Kg	119 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

155138

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-3
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Soil
ID MARKS : SED1 (Soil) 3-2514
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 14-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/Kg	< 10.0 µg/Kg

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/Kg	119 %

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

155139

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 7-MAY-1993

REPORT NUMBER : D93-5364-3
REPORT DATE : 1-JUN-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Soil
ID MARKS : SED1 (Soil) 3-2514
PROJECT : Carswell AFB (3-2512-2514)
DATE SAMPLED : 5-MAY-1993

MISCELLANEOUS ANALYSES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Total Solids	0.01 %	81.6 %
Analyzed using EPA 160.3 on 11-MAY-1993 by KOB		

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

155199

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-1
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TBS2 3-2594
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 21-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	1.5 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		1.5 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	93.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin RZ

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155131

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-1
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : TBS2 3-2594
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 21-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	93.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

155192

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-2
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW5 3-2595
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	92.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

David R. Godwin

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155133

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-2
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW5 3-2595
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	92.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

155194

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 14 May 1993
Location: Base Service Station
Field Number: SW5
Date received: 17 May 1993
SWD Number: 3-2595
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	< 0.2	mg/L	05/20/93	1	418.1

NDRC LABORATORIES, INC

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

155195

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-3
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW4 3-2596
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Benzene	1.0	µg/L	<	1.0	µg/L
Toluene	1.0	µg/L	<	1.0	µg/L
Ethyl benzene	1.0	µg/L	<	1.0	µg/L
Xylenes	1.0	µg/L	<	1.0	µg/L
BTEX (total)			<	1.0	µg/L #

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
Bromofluorobenzene(SS)	50.0	µg/L	93.0	%

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

David R. Godwin

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

155196

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-3
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW4 3-2596
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	93.0 %

David R. Godwin

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

155197

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 14 May 1993
Location: Base Service Station
Field Number: SW4
Date received: 17 May 1993
SWD Number: 3-2596
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	< 0.2	mg/L	05/20/93	1	418.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

155198

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-4
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW3 3-2597
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L
BTEX (total)		< 1.0 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	93.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

15[illegible]199

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-4
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW3 3-2597
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	< 10.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	93.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

155200

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 14 May 1993
Location: Base Service Station
Field Number: SW3
Date received: 17 May 1993
SWD Number: 3-2597
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	1.1	mg/L	05/20/93	1	418.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

1552 M

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-5
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW2 3-2598
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	24.0 µg/L
Toluene	1.0 µg/L	51.0 µg/L
Ethyl benzene	1.0 µg/L	7.4 µg/L
Xylenes	1.0 µg/L	53.0 µg/L
BTEX (total)		135 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	87.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1552

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-5
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW2 3-2598
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	350 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	87.0 %

NDRC Laboratories, Inc. David R. Godwin PZ

David R. Godwin, Ph.D.
Chief Executive Officer

155203

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 14 May 1993
Location: Base Service Station
Field Number: SW2
Date received: 17 May 1993
SWD Number: 3-2598
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	0.2	mg/L	05/20/93	1	418.1

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-6
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW2/QC 3-2599
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	24.0 µg/L
Toluene	1.0 µg/L	51.0 µg/L
Ethyl benzene	1.0 µg/L	7.4 µg/L
Xylenes	1.0 µg/L	54.0 µg/L
BTEX (total)		136 µg/L #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/L	86.0 %

Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 17-MAY-1993

REPORT NUMBER : D93-5716-6
REPORT DATE : 26-MAY-1993

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Janice Stewart

SAMPLE MATRIX : Liquid
ID MARKS : SW2/QC 3-2599
PROJECT : Carswell AFB (3-2594-3-2599)
DATE SAMPLED : 14-MAY-1993
ANALYSIS METHOD : EPA 8020
ANALYZED BY : RJD
ANALYZED ON : 20-MAY-1993
DILUTION FACTOR : 1

METHYL TERTIARY BUTYL ETHER		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Methyl Tertiary Butyl Ether	10.0 µg/L	360 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
4-Bromofluorobenzene (SS)	50.0 µg/L	86.0 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.
Chief Executive Officer

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, Texas 75235
214/905-9130

Report Date: 20 May 1993

District: Fort Worth
Project: Carswell AFB
Date Sampled: 14 May 1993
Location: Base Service Station
Field Number: SW2 QC
Date received: 17 May 1993
SWD Number: 3-2599
Sample Matrix: Water
Analyst: SAJ, RW

Parameter	Detection Limit	Results	Units	Date Analyzed	Dilution Factor	Method
TRPH	0.2	0.3	mg/L	05/20/93	1	418.1

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-199
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY	DATE SAMPLED: 05/14/1993
PROJECT: CARSWELL AFB	DATE RECEIVED: 05/18/1993
CONTRACT #: DACW63-91-D-0033	DATE EXTRACTED: NA
FIELD ID: SW2/QA	DATE ANALYZED: 05/20/1993
	EXTRACTION/PREPARATION PROCEDURE: EPA METHOD 5030
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9305199-01A	SAMPLE VOL./WT.: 5ml
SWD NO.: 3-2600	DILUTION FACTOR: 1, 20

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	62	10 *
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	22	10 *
V7	Toluene	78	10 *
V8	Xylenes (Dimethyl benzenes)	113	10 *

Fluorobenzene (Surrogate) 120%

Note: All positively identified compounds were second column or second detector confirmed.
* A lower sample volume or higher dilution factor was used for the quantification of this compound due to high analyte concentration.

Huey-Chen Chow — June 2, 1993
Chemist — Date

NONHALOGENATED VOLATILE ORGANICS
EPA METHOD 8015

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No.: 93-05-199
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY		DATE SAMPLED:	05/14/1993
PROJECT: CARSWELL AFB		DATE RECEIVED:	05/15/1993
CONTRACT #: DACW63-91-D-0033		DATE EXTRACTED:	NA
FIELD ID: SW2/QA		DATE ANALYZED:	05/20/1993
		EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 5030
		INSTRUMENT ID:	SVG4
		MATRIX:	AQUEOUS
		% MOISTURE:	NA
		REPORT WT.:	NA
ELI SAMPLE ID: 9305199-01A		SAMPLE VOL./WT.:	5ml
SWD NO.: 3-2600		DILUTION FACTOR:	10

COMPOUND	CONCENTRATION ug/L (ppb)	DETECTION LIMIT ug/L (ppb) *
Ethylether	<20	20
Ethanol	<20	20
Methyl ethyl ketone (MEK)	<20	20
Methyl isobutyl ketone (MIBK)	<20	20
Methyl-T-Butyl Ether (MTBE)	978	20

SURROGATE	RECOVERY
1.1.1 Trichloroethane	80%

Note: All positively identified compounds were second column or second detector confirmed.
* Higher detection limit is due to matrix interference.

Susie Yang
Chemist

June 4, 1993
Date

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
EPA METHOD 418.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

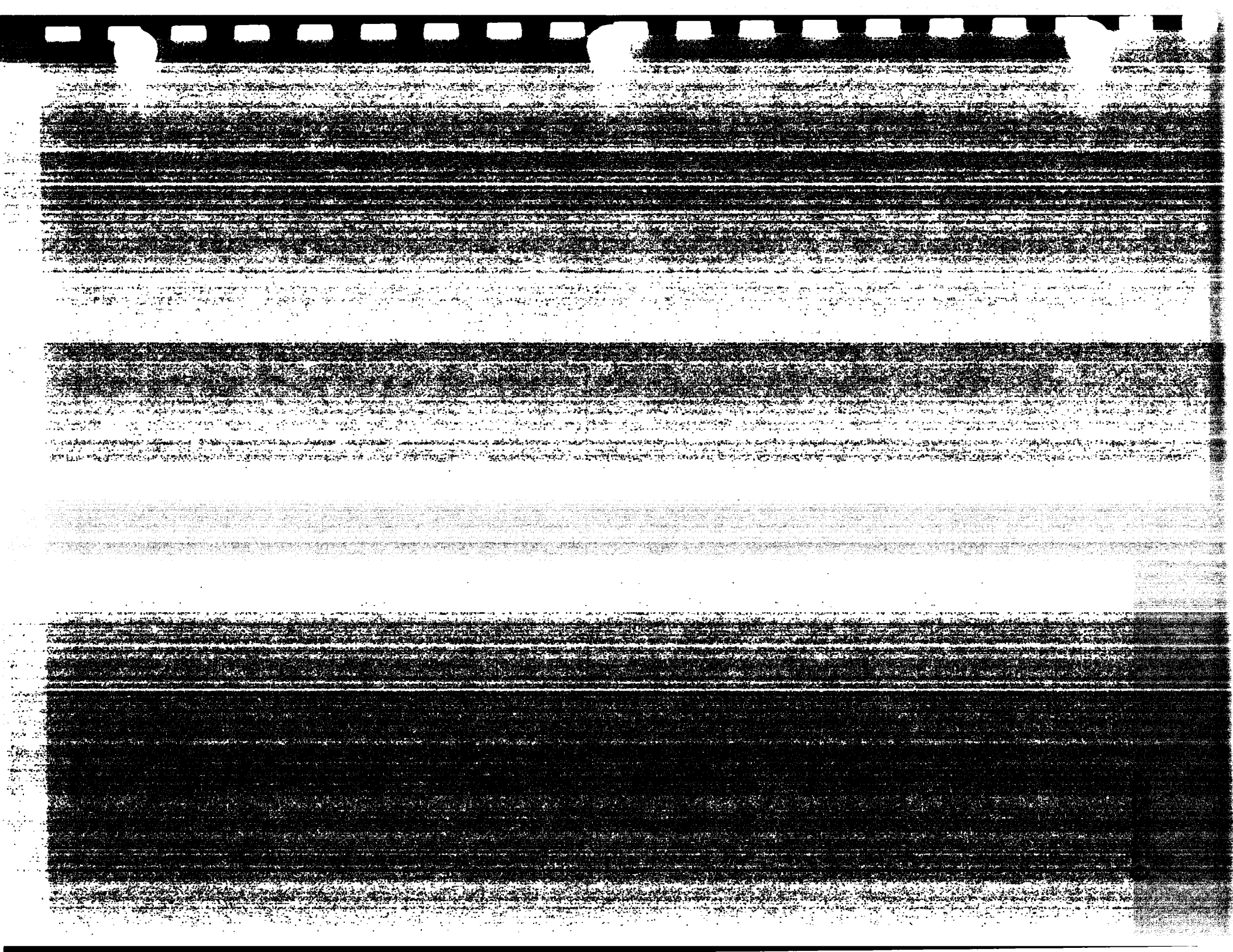
Order No.: 93-05-199
Hazardous Waste Testing
Certification: 1165

CLIENT: U.S. ARMY CORPS OF ENGINEERS SWD LABORATORY	DATE SAMPLED:	05/14/1993
	DATE RECEIVED:	05/18/1993
PROJECT: CARSWELL AFB	DATE EXTRACTED:	05/24/1993
CONTRACT #: DACW63-91-D-0033	DATE ANALYZED:	05/24/1993
FIELD ID: SW2/QA	EXTRACTION/PREPARATION PROCEDURE:	EPA METHOD 418.1
	INSTRUMENT ID:	FTIR
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305199-01A	SAMPLE VOL./WT.:	1 L
SWD NO.: 3-2600	DILUTION FACTOR:	1

CONCENTRATION [mg/L (ppm)]	DETECTION LIMIT [mg/L (ppm)]
0.5	0.1

Ren Zheng, Ph.D.
Chemist

June 2, 1993
Date



FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE